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ABSTRACT

This notebook of career counseling materials is a compilation of career information on nursing and the allied health fields. The first section provides general information useful in choosing a health career on such topics as career planning, career mobility, employment prospects, financial aid, terminology in health job titles, and an annotated bibliography of health career information. The major portion of the guide consists of career information on 66 health occupations organized under 11 occupational categories: Dental, dietary, administration, medical laboratory, medical machine services, medical practitioners and assistants, nursing, public health and health education, records and office services, rehabilitation, and other. Types of information provided for each health occupation include description of occupation, desirable personal qualities, educational requirements and list of Illinois educational programs, employment prospects, salary, career mobility, list of reading materials, addresses of professional organizations, and further sources of information. (NJ)

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HEALTH CAREERS PLANNING GUIDE -- ILLINOIS

prepared by

Area Health Education System
Region 3-B

February 1976
Second Edition

U.S. DEPARTMENT OF HEALTH,
EDUCATION & WELFARE
NATIONAL INSTITUTE OF
EDUCATION

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INTRODUCTION

All high school and college students are faced with the task of making future career plans. For a few students this is an easy, smooth, more or less continuing process, but for most students it is a difficult job requiring the help of others. A recent major study conducted by the American College Testing Program found that students appreciate career guidance and would like more such help.* Our increasingly complex world of work with its larger number of career options requires that students make greater efforts in order to become aware of their alternatives. To the extent that they become aware of their alternatives and understand themselves in relation to these alternatives they will increase the likelihood of making realistic, satisfying decisions.

In the last decade the number of persons employed in the health occupations has risen sharply. It will continue to rise for the foreseeable future. At the same time, further specialization in the realm of health care has resulted in the creation of new health occupations. It has been difficult for students, counselors, and teachers to stay informed about these new occupations and their required educational and training programs. This lack of current information in the health fields has prevented students and counselors from being aware of all career possibilities.

Recognizing that this is a bad situation, the Illinois Area Health Education System (AHES) has undertaken as one of its programs the development of career counseling materials which are designed to make up for this lack of health career information, and thereby aid in career planning done by students with the assistance of counselors, teachers, parents, and others.

The health career counseling materials that have been assembled here are from many sources and respond to these informational needs. Most of this information is about the ALLIED HEALTH fields and nursing. The allied health fields are those which are allied with and provide assistance to doctors, dentists, and other very highly trained health practitioners. There are many allied health fields; some of the more commonly known are dental assisting, medical technology, physical therapy, and speech therapy.

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*American College Testing Program, National Study of Student Career Development: Summary of Results, ACT Research Report No. 61, Iowa City, Iowa, November 1973

This career information has been placed in a looseleaf notebook so that the Illinois AHES staff can easily update it. This notebook is in the offices of the counselor responsible for career counseling. In some cases, health occupations teachers will have copies.

It is hoped that students, counselors, and teachers will make copies of material that interests them (none of the information is copyrighted).

Questions concerning allied health career planning may be addressed to:

Karl Runkle
Counselor, Allied Health Professions
2 Student Services Building
University of Illinois
Champaign, Illinois 61820

INFORMATION PROVIDED AND HOW TO USE IT

Most of the contents of this volume is career information on the allied health fields. "Allied health" is a broad classifying term for the work activities that aid the functioning of doctors, dentists, and nurses. It also includes the work of those who perform environmental health work. The allied health occupations discussed in this volume require educational preparation that is specifically health-related.

Important General Information

Before reading about the specific health fields you are interested in, it would be better to read the first section of the Guide, "Important General Information." It will give you an understanding of matters which are essential to your making good use of the specific health careers information. The key parts of the first section are:

Introduction - 1-A
Career Planning - 1-C
Career Mobility - 1-D
Suggestions Concerning High School Courses - 1-E
What You Need to Know About Educational Programs - 1-F
Employment Prospects - 1-G

Information on Specific Health Careers

A variety of information for you to think about as you plan your future is given for each of the occupations described in sections 2 - 12 in the Guide. An effort has been made to provide you with honest, realistic information so that you can reach a broad understanding of each health occupation that interests you. As you find other information, you will notice that some of it resembles advertising. It is hoped that the material in this Guide will help you to evaluate other health career literature.

Below are the types of information given for each health occupation, and in some cases, comments about that information:

Type of Information	Comments
-description of the occupation	(In many cases this material is taken directly from the Health Careers Guidebook, 3rd edition, 1972, by the U.S. Department of Labor and the National Health Council)
-desirable personal qualities	(Abilities, interests, and personality qualities that are generally considered helpful for persons interested in particular occupations)
-educational requirements & list of educational programs in Illinois	(Sometimes the educational programs for different levels of practice in the same field are listed on the same page, rather than following the description of that specific level of practice. Example: educational programs for medical record administrators and medical record technicians, page 10-B-2)
-employment prospects	
-salary	
-career mobility	(This refers to the presence or absence of opportunity for advancement within a health field or into a related field; this is an area of great concern when planning your career)
-list of reading materials	
-addresses of professional organizations	(Almost every health field has its own professional organization which performs a number of functions, including providing career literature)
-suggestions on how to learn more about the occupation and your interest in it	(Reading career literature, talking with health workers, and doing health-related work are excellent ways to determine your interest in an occupation)

CAREER PLANNING

The purpose of this Health Careers Planning Guide is to provide you with information which will be useful as you consider the possibility of a health career. The best way to approach planning your career is to give the matter some careful thought. Decisions affecting your career that are made as a result of chance or that are forced on you by circumstances may turn out to be unhappy ones. Giving serious attention to your future will not guarantee you happiness in your work, but it will make happiness more likely.

This section on "Career Planning" is not a complete guide to all aspects of career planning. (See your counselor for help in determining and carrying out the important aspects of your planning efforts.)

What is career planning? Briefly, it is a process, a series of activities aimed at looking for answers to the following questions as they relate to careers in which you are interested:

-What are my interests?

-What are my abilities?

-What beliefs and principles ("values") are important to me?

-What are my goals in life?

-What opportunities do I have now and might I expect in the future to explore more fully and to develop my abilities?

-What are the various occupations really like; what are the important aspects of these occupations as far as I'm concerned?

The above questions are important; finding answers to them is a difficult job.

There is an excellent, very practical book available which may assist you. It is:

What Color Is Your Parachute?
A Practical Manual for Job-Hunters and Career-Changers

by Richard N. Bolles
(revised every year or two--the most recent edition is 1976)

Ten Speed Press
Box 4310
Berkeley, California 94704

($4.95 in paperback)

Chapter 5 of this popular book (pages 59-104) has proven extremely useful to many industrious students, as well as to older persons, who have wished to plan their careers and their lives, so that they can make a living doing what they like to do. (In addition, Parachute describes in depth how to find the kind of job that is right for you, considering all the qualities that make up your unique self.) The book explains a variety of methods which can help you determine:

- your goals in life
- what your skills are (the things you do well, and that you are interested in, that you like doing)--there is no sense spending years of your working life doing things that you don't like
- how long it will take you to achieve your goals

There are many things you can do to explore your interests while in high school or college. The subjects you study in school may indicate to you which general fields are appealing. Reading career information is important. Teachers, librarians, and counselors can probably recommend books, magazines, and newspapers that will increase your understanding. Take a look at what you do outside of class. If you are involved in extracurricular activities, you probably have some talents and gain some satisfaction out of them. What are those talents and satisfactions? How do you spend the rest of your time? Do you have a job? What are your hobbies? What do you daydream about? Answers to questions such as these might be clues to interests you are not aware of.

It is good to discuss your interests with parents, counselors, teachers, friends, and others. The most helpful people to talk with are those who are willing to really listen to you. You will probably value the thoughts of those who make an effort to understand what you think and how you feel (even if they don't see everything the way you do).

You need to examine the occupations that appeal to you--close up. It is very important for you to take the initiative in finding work which is related to your interests. Many hospitals and other health care facilities have need for paid and volunteer part-time and summer workers.

In addition to (or in place of) work experience, talk to people who have jobs that interest you. For example, you may like laboratory work, but how do you know you would like working in a medical laboratory? You would have to find out about the different kinds of work in a medical laboratory. Or you may want to work in a setting where you can help sick people in a more direct, personal way, but how do you know you would enjoy being a physical therapy assistant, a nurse, or a medical social worker? It is quite possible to get a more accurate idea after you have decided which of the items listed below* are important to you:

A) Considerations about the nature of work

- Use of abilities
- Sense of accomplishment
- Challenge
- Creative or aesthetic outlet
- Intellectual stimulation
- Working with ideas
- Working with things
- Working with others
- Competition
- Service to others
- Control over others
- Responsibility
- Independence
- Working by oneself
- Visible results
- Variety
- Physical activity
- Outdoors
- Excitement
- Risk or adventure

B) Considerations related to work

- Job title
- Glamor
- Prestige
- Pay
- Fringe benefits
- Security
- Hours of work
- Surroundings
- Safety hazards
- Geographic location
- Transportation
- Availability
- Credentials required
- Age and sex requirements
- Union membership
- Discrimination
- Occupational inheritance
- Socioeconomic trends
- Social contacts
- Way of life

*This list is from: Daniel Sinick, Occupational Information and Guidance, Houghton Mifflin Company, Boston, 1970, p. 13.

Hospitals, clinics, nursing homes, and social welfare agencies are good places to find experienced workers to talk with. For instance, if you are interested in dietetics, phone a hospital, nursing home, or other institution having a food service and ask a dietitian or dietetic technician if you can come for a visit. When talking to the dietitian (or to any kind of health worker), do not hesitate to ask questions aimed at finding out if he/she derives from work the things in Considerations A) and B) which you believe are important for your happiness. You will be able to see if the answers you get match the "picture" you have of that kind of work. If you talk to several dietitians (or whatever kind of health practitioner you talk to) and find that their views of their work are a lot different from what you expected, you will probably start to re-evaluate that career interest. If your ideas about the field are confirmed, then you have reason to feel greater certainty that you have a realistic view of that field.

You will find that most people like to talk about their careers; they will be glad to share their experiences with you. You may want to include questions such as these in your conversation:

-"What do you do during a typical work day?"

-"How did you happen to get into this kind of work?"

-"What kind of educational and other preparation do you have?"

-"What do you like best about your work?"

-"What do you dislike most about your work?"

-"What advice do you have for a young person considering this kind of work?"

Following are some examples of how work experience can aid your career planning. If you have an interest and ability in mechanical work, you might find it helpful to determine whether or not your interest in repairing electrical equipment is such that you might be happy as a biomedical engineer or biomedical engineering technician. As a repairman of complex biomedical equipment in a hospital, you might find that your mechanical interests are well-suited to your job duties, or on the other hand, that you would rather try automobile mechanics. Or it is possible that your hospital work experience tells you that you would rather use your mechanical talents only for your personal pleasure--like working on your car.

A second example. If you think you might like nursing, or speech therapy, occupational therapy, or any of the other therapeutic or rehabilitative fields, it is wise to acquire some form of work experience in a hospital, nursing home, or other setting which brings you into close (and at times, difficult) personal contact with people. Some people who have wanted to help people in therapeutic relationships have discovered through trial work experiences that they were unable to handle the strong emotional demands that such relationships placed on them. Strange as it may seem, some people have found that they cannot stand to be around sick people so much of the time. On the other hand, others have found great personal satisfaction in rehabilitation or nursing careers.

Although only a few health occupations have been mentioned in these examples, important personal learning can come from any health-related work. Through work experience you can find out how it feels to take orders and give orders, work independently or teamed with others. You can learn how much income and prestige various kinds of workers obtain, and you will then be able to ask yourself what your income and status needs are. And there is much more you can discover about yourself.

Last of all, you should accept the fact that most young people--because their horizons are expanding--frequently change their ideas about many things (the same is true with many older people, too). This is what growing up is all about. As you change, it is quite possible that your ideas about work will change. Work will continue to change also: in a few years health occupations will emerge which do not exist now. All of this makes career planning harder, but not any less important. It is best to plan flexibly--not narrowly. Putting "all your eggs in one basket" can prove costly if your career interests change, or if circumstances prevent you from carrying out your plans.

CAREER MOBILITY

The means for fulfilling your hopes or aspirations in your work is through career mobility -- either within your field or into another field. Career mobility can help you to become more, by making it possible for you to:

1) perform more complex job duties
2) assume more job responsibility
3) gain access to further opportunities
4) receive greater status
5) earn more money

If you are looking into the possibility of education and work in a health field, you ought to ask yourself questions such as these:

> "What might be the consequences of choosing this particular field?"
>
> "What will my beginning salary be, and what might it be after five or ten years of work?"
>
> "Does my field of interest offer the opportunity for assuming greater responsibility as I become more capable?"
>
> "After a few years of work, can I quit in order to devote time to my family or to pursue some other endeavor, then return to work later on? Can I work part-time?"
>
> "If I decide to change my field of work after a while, what is the likelihood of entering a related field? What sacrifices might such a change require of me?"
>
> "If such a change requires me to acquire additional education, are there relevant educational programs or proficiency and equivalency tests available to me?"

In order to move from one job to a better one 1) you must be given an opportunity to receive the necessary education and/or experience you need to qualify for that new job, and/or 2) if you already are capable of doing well in that better job, you need to find out if you have the opportunity to prove that you are capable. Through the use of certain examinations, you may be able to demonstrate that you are capable of doing a higher level of work. Find out about:

Equivalency Tests - geared to find whether a given individual can be considered to have achieved the level of knowledge represented by specific educational programs or courses at given academic levels. Grades on such examinations are used for exemption of individuals from required courses, for exemptions with course credits, or for entrance with or without advanced standing into course programs.

Proficiency Examinations - measure the competence of individuals with respect to specific work or related activities or with respect to academic achievement. Proficiency examinations for academic course work are sometimes called equivalency examinations, while examinations to determine work proficiency levels may be called performance evaluation tests or work sampling tests.

All students should be aware of these equivalency examinations:

General Equivalency Diploma Examination (GED) tests for academic knowledge at the high school level; those passing this test are awarded a high school equivalency diploma which enables them to qualify for jobs and college entrance requiring a high school diploma.

College Level Examination Program (CLEP) tests for college-level achievement in many subject matter areas; these examinations enable students to receive college credit and advanced placement in college and university academic programs.

An agency of the federal government has recognized that there is a great need for developing examinations which will help the career advancement of capable health workers:

Division of Associated Health Professions
U.S. Department of Health, Education and Welfare
Federal Building, Room 416
9000 Rockville Pike
Bethesda, Maryland 20014

This agency is working to develop exams in a number of allied health fields, but it is a slow task. After the tests are developed, they must be approved for use in each health field by the professional organizations which have the major voice in setting standards in those fields. For a variety of shortsighted reasons, some professional organizations have been slow to encourage these needed changes affecting career mobility.

Even if you intend to work for only a short time in a health job you should think about career mobility because for unforeseen reasons, you may later choose to or out of necessity have to remain in that job much longer than you had anticipated.

Beware of a Dead-End

In many of the health occupations which require only on-the-job training or two years or less of education after high school, wages are very low if you are the sole supporter of a family. In some cases added years of work experience do not bring much increase in salary. In addition, opportunities for advancement may be sparse or non-existent.

There is a lack of good employment opportunity in some health fields, in some employing institutions, and in some geographical areas. Remember that the occupation and/or the employer have an effect on whether you are engaged in dead-end work or instead have a chance at better opportunities.

These above questions are worth asking -- probably it will not be possible to answer all of them. But even so, it is good to raise such questions, if in the questioning process you develop the habit of being aware of all your options. Knowing your alternatives will make it possible for you to make better career choices.

SUGGESTIONS CONCERNING HIGH SCHOOL CLASSES

In most of the health fields described in the following pages, little has been said about high school classes that would be useful preparation for later education and work. Some health fields require considerable intellectual understanding in the biological and physical sciences; other fields require the ability to understand and show concern for people. Success in some fields calls for a combination of both these qualities.

Most educational programs of two years in length or less (in junior and community colleges, vocational schools, technical schools, and hospitals) do not require you to have taken any specific classes in high school. Obviously some high school classes are more directly related to particular health fields than are other high school classes. If you think you might be interested in a medical laboratory career, algebra, biology, and chemistry would help you to better understand your later course and laboratory work. If you have an interest in medical office or medical records work, classes in business would be useful. If you are interested in working more directly with persons receiving health care, courses in the behavioral (such as psychology) and social sciences could be an asset. Are you interested in art, music, literature, speech, or drama? If your school offers these classes they can be of advantage to you should you enter a health field dealing directly with patients. And regardless of your interests, courses that give you an opportunity to read are good preparation for college work. Teachers, counselors, parents, and others to whom you can go for good help may be of use to you as you decide which classes make the most sense. In addition, community college faculty members and counselors are willing to discuss your high school classes as they relate to your college plans.

For students thinking about a health career requiring a bachelor's degree (usually four years) or more, there are particular high school classes which you should take because they are required for entry into many colleges and universities. Examples of often required high school classes are those in the biological and physical sciences, mathematics, English, and foreign language. Carefully studying the catalogs of colleges you are considering -- with the help of a counselor or someone else who understands what the catalogs say -- is a good way to learn what high school classes colleges expect you to have taken.

WHAT YOU NEED TO KNOW ABOUT EDUCATIONAL PROGRAMS

The educational and training programs listed in this guide are conducted by the following kinds of institutions: community (junior) colleges, colleges and universities, hospitals, public schools, schools specializing in health curricula, the armed forces, and proprietary schools (privately-owned, profit-making schools). All of the programs described are given in Illinois except for some of those sponsored by the armed forces. The listings of Illinois health programs are complete as of September 1975.

Learning About Your Chances of Admission

To get more information about the educational and training programs listed in this handbook, write to the directors of those programs. For instance, if you are interested in the dental hygiene program at Parkland College and the environmental health program at Illinois State University, you can address your letters to:

Director, Program in Dental Hygiene
Parkland College
Champaign, Illinois 61820

and

Director, Program in Environmental Health
Illinois State University
Normal, Illinois 61761

Admission into many of the educational programs in the health professions is competitive. Therefore, it makes sense for you to visit in person, to phone, or to write to the directors of all the programs you are considering. Since the deadlines for applying to some educational programs are 9-12 months before classes actually begin, make these contacts early.

Educational institutions having health-related programs in which many more students are interested in enrolling than the schools will admit, are faced with the task of selecting the students for their programs. This selective admissions situation is very common. In order to gain acceptance into a competitive educational program, you must have the kinds of qualifications required. Those qualifications vary somewhat among different programs and different educational institutions. Following is a list of commonly used considerations: grades, rank in class, ACT and other test scores, completion of prerequisite course work, residency, the results of a personal interview, letters of recommendation, and relevant work experience.

In order to estimate the likelihood of your being accepted into an educational program, it would be helpful to request the following information from the program director:

-How many students applied to the program last year?

-How many students will be accepted this year?

-What were the average grades of those accepted last year?

-What was the lowest grade average accepted?

-Are science grades considered to be important?

-What are all the other selection criteria (standards)?

-Are the selection criteria weighted? (For example, do certain criteria have greater importance than certain others?)

It is likely that some program directors will not disclose all of this in information, and some will not have all of this information. But, these are fair questions, and it is in your best interest to find the answers. The more information you can gather, the better you can judge your chances of being accepted into the programs in which you are interested.

Good Job Prospects Do Not Mean There Are Plenty of Educational Prospects

It is commonly known that the employment situation in the health professions is generally good, and will almost surely continue to be good for the foreseeable future. But it is not widely understood that the educational programs in hospitals, community colleges, and colleges and universities have limits on the numbers of students they can admit. Often these programs have two or three, even as many as ten times the number of applicants than they have space for. Thus, the fact that there are jobs for health workers should not be interpreted to mean that educational programs in these fields have space for an equally large number of students. That means that you should be aware of other educational programs and/or related health fields as possible alternatives.

Determining the Quality of the Educational Program

All of the educational programs listed on the following pages are offered by legitimate public, private, and proprietary institutions. However, some educational programs have not received approval by professional associations which set standards for educational programs in their respective disciplines. This does not necessarily mean that such programs are inferior, but it should motivate the student to investigate more thoroughly before deciding on that particular program.

It is often difficult to determine the true significance of educational programs which are approved or not approved by professional organizations. Yet it is in your best interest to find out the advantages and disadvantages of selecting a particular program for your future place of work and further education and career prospects. For help in evaluating programs and schools you are considering, you may talk with counselors, teachers, and local health practitioners, and write to the schools and appropriate professional organizations.

Educational Programs Outside of Illinois

Students considering a field requiring a bachelor's degree or more education (the competition for admission into such educational programs is often intense) may want to learn about educational programs offered in colleges and universities outside of Illinois. Probably the best way to do this is to write to the professional organization(s) listed for each field. The professional organization should be able to send you a list of all schools in the nation offering educational programs in that particular field. In turn, you can write to the schools that interest you.

If you are considering out-of-state programs in fields where competition for admission is fierce, you may have very little chance of acceptance at public universities. This is because they give preference to qualified students from their own states. Therefore, when looking out-of-state, you are better off applying to private colleges and universities because they have no residency requirements.

Certification; Licensure; Registration

You may encounter these three terms. They are interrelated and they are complicated. Their specific meaning varies with each health profession. Only general definitions are given here; detailed information as these terms relate to fields in which you are interested can be obtained from the appropriate professional organizations. (Students should not feel that they have to understand these terms--they are not important to your career planning.)

In many health professions individuals are required to demonstrate that they are competent in their field before they are allowed to work. Depending on the field, there are two ways in which individuals may show that they are capable: certification and licensure.

Certification - a mechanism set up by professional health organizations for granting recognition to individuals for having met certain qualifications. Such qualifications may include: a) graduation from an approved educational program, b) passing a qualifying examination, and/or c) completion of a given amount of work experience.

Licensure - a mechanism set up by agencies of government for granting recognition to individuals for having met certain qualifications. The qualifications often resemble those required for certification.

Registration - a mechanism set up by a professional health organization or governmental agencies for maintaining an official list of individuals who have demonstrated that they are qualified to work in their particular health profession. Qualification for obtaining registration may include those required for certification.

EMPLOYMENT PROSPECTS

It is natural for students to want to know if they will be able to find employment in a particular health occupation after completing their education. It is not possible to guarantee students that they will find a job, or that there will be job openings in a specific part of the state or the nation.

A number of studies have tried to forecast how many dental assistants, physical therapists, nurses, and other kinds of health workers will be employed at future dates. Unfortunately, these studies cannot always accurately make predictions. It is relatively easy to predict how many medical technologists a small city with two hospitals will need in 1980 or 1985, but it is not possible to know whether those two hospitals will have the money in 1980 or 1985 to hire all the medical technologists they need.

On the other hand, experts agree that some form of national health insurance will come some time in the 1970's, and that will make it possible for people to get medical attention who could not afford it in the past. And because of national health insurance it is likely that middle income people will utilize health services more frequently than before. Finally, our birth rate is declining and the average age of the population is increasing. This larger percentage of older people will also result in more use of health facilities. All of this adds up to a greater need for health workers in the coming years. Some health professions will expand faster than others, and a number of new professions will emerge as the health fields continue to become increasingly specialized.

Some information on employment prospects -- in 1974 and for the next ten years -- has been obtained for a number of the health fields discussed in this guide. That information is located in the "Further Information" section of those fields.

HEALTH OCCUPATIONS WHICH ARE NOT EMPHASIZED IN THIS GUIDE

Health Occupations Which are Only Briefly Discussed

Only descriptions of the fields and listings of educational programs are given for the following health occupations: chiropracter, dentist, optometrist, osteopathic physician, pharmacist, physician, podiatrist, and veterinarian. More information on these professions can be obtained from the professional associations listed along with the occupational descriptions.

Health Occupations Which Are Not Discussed

A number of occupational possibilities in the health care field are not discussed. They represent functions which are essential but not unique to the health field; entry into them requires no special health-related education. Some of these occupations require other kinds of educational preparation beyond high school; others can be learned on the job. These occupations fall in the general categories of: clerical, communication, data processing, financial management, maintenance, personnel, public relations, and purchasing and receiving.

There are a few health occupations employing small numbers of people for which there are formal educational programs in Illinois but which are not described in this guide. Information about fields and educational programs which are of particular interest to the reader may be requested from the appropriate organizations in the section "Organizations Which Have Health Career Information," located in the "General Information" section.

FINANCIAL AID FOR EDUCATIONAL PROGRAMS

There are many kinds of financial help available to students in health-related educational programs. However, it is difficult to discover all the sources of financial aid for which you may be eligible.

For high school students, the first step to take in obtaining financial aid is to apply early in your senior year. While you are learning about colleges so that you can choose the one you will attend, write to the Financial Aids Office of each college. (Students intending to get education or training at a hospital or other kind of institution should ask those institutions about financial aid.) Ask for complete information on all forms of financial assistance, as well as for an application for financial aid. If you are able to select a college, and make application for financial aid early in your senior year of high school, you will have the best chance of getting aid.

A good booklet which will help you plan your college expenses and give you general advice on how to get the aid you need is:

Meeting College Costs, A Guide for Parents and Students

Your counselor or a college financial aids office may have a copy. If not, you can get one free of charge from College Board Publications Orders, Box 2815, Princeton, New Jersey 08540.

Colleges determine the financial aid for which you qualify on the basis of your need. Usually, they determine your need by analyzing either a form your parents fill out--Parents' Confidential Statement, or another form--Student's Financial Statement.

There are several kinds of financial aid. The most common ones are:

scholarships

grants (money given which does not have to be repaid)

loans

college work programs (college jobs for which you are paid)

Full information on aid should be requested from a college financial aids office. Following are aid possibilities of special significance to the health professions:

-assistance from the federal government for students interested in certain health professions (programs a) and b) were not funded as of August 1975)

a) Health Professions Student Loan Program and Nursing Student Loan Program
b) Health Professions Student Scholarship Program and Nursing Student Scholarship Program

c) Public Health/National Health Service Corps Scholarship Training Program
d) armed services assistance programs for enlisted persons
e) GI Bill (for returned service personnel)
f) Social Security (for those whose parents are disabled, dead, or older and retired

-hospital auxiliaries (the auxiliary groups in hospitals raise money, which is often granted to persons preparing to enter a health profession)

-voluntary health associations (heart, cancer, etc. organizations give money to persons desiring education to enter a health profession)

-health professional associations (for the health professions mentioned in this book, see the heading "Professional Organization Where More Information May Be Obtained" in the "Further Information" sections; addresses of associations are given which can supply you with information on aid designed especially for persons in that health field)

-Illinois Hospital Association--provides scholarships to students preparing for entering into several health professions

-labor unions, larger businesses, foundations, religious organizations, cultural organizations, civic groups, and service organizations may provide financial assistance. Ask a counselor about this. It would also be worthwhile to contact such organizations because they may not have publicized the fact that they provide aid.

(this information was prepared with the help of
Frechettia Ford, Assistant Coordinator, Human
Resources, Illinois Hospital Association)

TERMINOLOGY USED IN HEALTH JOB TITLES

The list of health occupations is long; the job titles are somewhat confusing. Many titles contain the words "technologist," "therapist," "technician," "assistant," or "aide." Generally, although there are a number of exceptions, this is what those terms imply about the education required for entry into a given health field:

"technologist" "therapist"	educational preparation at the bachelor degree level
"technician" "assistant"	educational preparation at the associate degree level (2 years) or one year of college or hospital training
"aide"	on-the-job training or short-term specialized training

MILITARY TRAINING PROGRAMS IN HEALTH FIELDS

The military services provide a multitude of health training programs for servicemen and women. The American Medical Association has approved a number of these military training programs in six fields. (Many Army, Navy, and Air Force health training programs are not approved by the American Medical Association; however, that does not mean that these programs are of poor quality.) Completion of one of these programs while in the armed forces will help the person who wants to work or continue his education in that health field after completion of military service. Those who have completed AMA-approved programs in the services are considered to have similar educational credentials as those graduates of non-military educational programs and are eligible to take the same necessary certification exams in their respective fields. Those who have completed non-AMA-approved programs usually are ineligible to take these examinations, which can result in their having more difficulty finding employment in their field.

Below is a list of health training programs, and which branches of the military services offer them:

Military Training Programs in Health Fields Which are Approved by the American Medical Association

Physician's Assistant (primary care)	Army, Navy, Air Force
Certified Laboratory Assistant	Army, Air Force
Medical Technologist	Army, Navy, Air Force
Nuclear Medicine Technician	Navy
Physical Therapist	Army
Radiologic Technologist	Army, Navy, Air Force

Additional information on these other military health training programs, and programs for former medical corpsmen is contained in the booklet, Compendium of Military Allied Medical Education, published by the American Medical Association in February 1975. It is available free of charge from:

American Medical Association
Department of Allied Medical Professions and Services
535 North Dearborn Street
Chicago, Illinois 60610

Below is a description of Army, Navy, and Air Force opportunities for earning college credit for courses taken in allied health fields:

ARMY: "The United States Army and Baylor University have entered into an agreement that makes it possible for students successfully completing selected enlisted courses at the Academy of Health Sciences, Fort Sam Houston, Texas, to obtain undergraduate credit. This agreement applies to 25 enlisted medical programs of instruction and encompasses 135 course offerings.

Students who attend these designated classes can be concurrently enrolled at Baylor University, if they desire, and thus become eligible to obtain a regular transcript of their credits to use as a permanent record of their educational experience."

NAVY: "The Navy Medical Department has an agreement with George Washington University for the enrollment of students in Navy medical technical courses as students at the University. The latter evaluates the courses, assigns academic credits for them, keeps scholastic records on all students, and, when all required credits are obtained, grants an associate degree in an allied health specialty. The University has a liberal policy of accepting transfer credits from other colleges and will grant credit for the College Level Examination Program (CLEP) and United States Armed Forces Institute (USAFI) courses so that the student, following the technical portion of his training, may complete degree requirements in a variety of ways. Courses which the student takes in an academic setting on his own time are heavily subsidized."

AIR FORCE: "The major training institution for allied health personnel in the Air Force is the School of Health Care Sciences, Sheppard AFB, Texas. This institution is affiliated with Midwestern University, Wichita Falls, Texas and the University of Nebraska, Omaha, Nebraska.

In addition to the above affiliations, all allied health students at the School of Health Care Sciences are enrolled with the Community College of the Air Force (CCAF) -- a multi-campus institution with its administrative center at Randolph Air Force Base, Texas, made up of existing, but previously unaccredited, schools of the Air Training Command and the USAF Security Service. The primary goal of CCAF is to integrate Air Force technical training and related college level education (off-duty) into consistent, meaningful patterns of career growth towards obtainable objectives. The heart of this effort is the Career Education Certificate (CEC) program. This program consists of eight main areas in which CCAF students are in the Health Care Sciences area. The CCAF Career Education Certificate is modeled after two-year associate degree programs of study, and while it is not a degree, it is felt that each program of study is equivalent to those programs available in the best vocational oriented colleges and trade schools."*

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* Ralph C. Kuhli, "Status of Accreditation of Military Allied Medical Education," speech given at Second National MEDIHC Conference, March 20-22, 1974, (mimeographed), p. 13. (This paper is available from the American Medical Association, where Mr. Kuhli is Director, Department of Allied Medical Professions and Services.)

Students with an interest in the details of military health programs should be able to get some information from local Army, Navy, and Air Force recruiters. In some cases, a recruiter may be able to guarantee in writing that, providing certain qualifying examinations are passed, the student will be allowed to enroll in a specific military health training program.

Further sources of information about the details of these programs are:

For U.S. Army health training programs, write or phone:

Mims C. Aultman, Colonel, MC, USA
Chief, Professional Education Coordination
Directorate of Personnel
Office of the Surgeon General
Department of the Army
Forrestal Building, Room 7C030
Washington, D.C. 20314

Telephone: (202) 693-6130

For U.S. Navy health training programs, write or phone:

James E. Wilson, Captain, MC, USN
Naval Medical Training Institute
National Naval Medical Center
Bethesda, Maryland 20014

Telephone: (301) 295-1390

For U.S. Air Force health training programs, write or phone:

William Greendyke, Colonel, MC, USAF
Director, Medical Plans and Health Programs
Department of the Air Force
USAF Headquarters
Washington, D.C. 20314

Telephone: (202) 693-5737

For students interested in medical laboratory work, there is an independent accrediting agency (not affiliated with the AMA) which considers certain armed forces medical laboratory training programs as equivalent to the course work it requires for becoming a medical laboratory technician. For information, contact:

American Medical Technologists
710 Higgins Road
Park Ridge, Illinois 60068

The U.S. Army provides a variety of educational programs in nursing. There are opportunities in the Army for receiving training as a practical nurse. There are also bachelor's degree programs and master's degree programs, including advanced specializations in midwifery, medical-surgical nursing, etc. The bachelor's and master's programs (for which competition for admission is great) are accredited by the National League for Nursing, making them acceptable for civilian employment. Full information on these nursing programs is available from:

Counselor, Army Nurse Corps
U.S. Army Recruiting Command
Building 108
Ft. Sheridan, Illinois 60037

Telephone: (312) 926-3815

From AMA, Allied Medical Education Newsletter, Vol. VII, No. 7, July 1, 1974, p. 10

NUMBERS IN HEALTH FIELD OCCUPATIONS

(Each occupation is counted only once. For example, all physicians are in medicine and osteopathy.)

HEALTH FIELD OCCUPATIONS	1973 ESTIMATED PERSONS ACTIVE		
Administration of health services	48,200		
Anthropology and sociology	1,600		
Automatic data processing in health field	4,000		
Basic sciences in health field	60,000		
Biomedical engineering	11,500		
Clinical laboratory services	162,800		
Dentistry and dental auxiliaries	274,400	Dentist Dental hyg. Dental Asst. Dental Lab. Tech	105,400 21,000 116,000 32,000
Dietetic and nutritional services	68,000		
Economic research in health field	400		
Environmental sanitation	17,000 to 20,000		
Food and drug protective services	44,400		
Funeral directors and embalmers	50,000		
Health and vital statistics	1,350		
Health education	22,500 to 23,000		
Health information and communicat'n	6,700 to 9,300		
Library services in health field	7,900		
Medical records	54,000		
Medicine and osteopathy	345,300	Physician (M.D.) Physician (D.O.)	333,300 12,000
Midwifery	4,200		
Nursing and related services	2,207,000 to 2,212,000	Registered nurse Practical nurse Nursing aide, orderly, attendant Home Health aide	815,000 459,000 910,000 23,000 to 28,000
Occupational therapy	13,200 to 14,200		
Opticianry	11,000		
Optometry	24,200 to 24,400		
Orthotic and prosthetic technology	2,500 to 3,500		
Pharmacy	132,900		
Physical therapy	24,600		
Podiatric medicine	7,100		
Psychology	27,000		
Radiologic technology	100,000		
Respiratory therapy	11,000 to 12,000		
Secretatial & office services in health field	275,000 to 300,000		
Social work	33,800		
Specialized rehabilitation services	11,050		
Speech pathology & audiology	26,500		
Veterinary medicine	26,900		
Vocational rehabilitation counseling	17,000		
Miscellaneous health services	252,950 to 258,450	Ambulance attendant Animal technician Electrocardiograph technician Electroencephalograph technician Operating room technician Ophthalmic assistant Orthoptist Physician's assistant Surgeon's assistant	207,000 5,000 9,500 3,500 to 4,000 11,400 15,000 to 20,000 450 900 200
TOTAL	4,387,950 to 4,432,750		

Source: *Health Resources Statistics: Health Manpower and Health Facilities*, Health Resources Administration, U.S. Department of Health, Education, and Welfare

MEN AND WOMEN EMPLOYED IN SELECTED HEALTH PROFESSIONS - 1970

Occupation	Total	Women	Men	Women as Percent of Total
1. Dental Hygienists	15,805	14,863	942	94.0
2. Dietitians	40,131	36,909	3,222	92.0
3. Health Record Technologists and Technicians	11,164	10,283	881	92.1
4. Medical Laboratory Technologists and Technicians	117,336	84,641	32,695	72.1
5. Nurses (RN)	829,691	807,359	22,332	97.3
6. Radiologic technologists and technicians	52,230	35,463	16,767	67.9
7. Therapists	75,161	47,563	27,598	63.3
8. Chiropractors	13,729	1,127	12,602	8.2
9. Dentists	90,801	3,110	87,691	3.4
10. Optometrists	17,219	692	16,527	4.0
11. Pharmacists	109,642	13,032	96,610	11.9
12. Physicians (MD's & Osteopathic)	280,929	25,824	255,105	9.2
13. Podiatrists	6,026	460	5,566	7.6
14. Veterinarians	19,435	985	18,450	5.1

SOURCE: U.S. Department of Labor

(This table listing the proportions of men and women in selected health fields is not meant to discourage young men or women from fields which are characterized by a large majority of the other sex. On the contrary, many fields are deliberately looking for promising young persons of the sex underrepresented in their field. This table is simply meant to inform the reader.)

HEALTH CAREERS CALENDAR

THIS CALENDAR gives you a quick check on how many years of education after high school, you should count on for the representative health occupations listed here. The lines and symbols show what is customary—some people take only minimum required training; many take more.

● Requires no special training.

- - - Entails an apprenticeship, special course, or on-the-job training.

▬ Requires special training in college, in a hospital or special school, or in a professional school after 1 to 4 years of college.

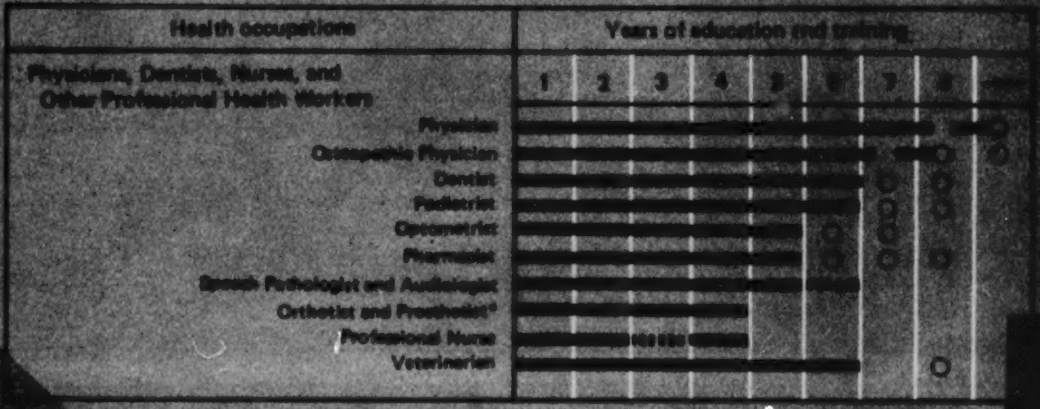
○ Though the line shows the minimum period to qualify, more preprofessional years in college lengthen the total training time.

☐ First square means one can get a junior professional job after college. Subsequent squares indicate that more study—to or beyond the master's or doctor's degree—as well as experience is usually needed for advancement.

▬ ▬ Requires special training of varying periods of time.

This calendar pictures training information in condensed timetable form. To get a more detailed picture, read the *Health Careers Guidebook* Occupational Descriptions and consult your school advisers for information and personal guidance on training and the local outlook for the career you want.

YEARS OF EDUCATION AND TRAINING BEYOND HIGH SCHOOL FOR CAREERS IN SELECTED HEALTH OCCUPATIONS



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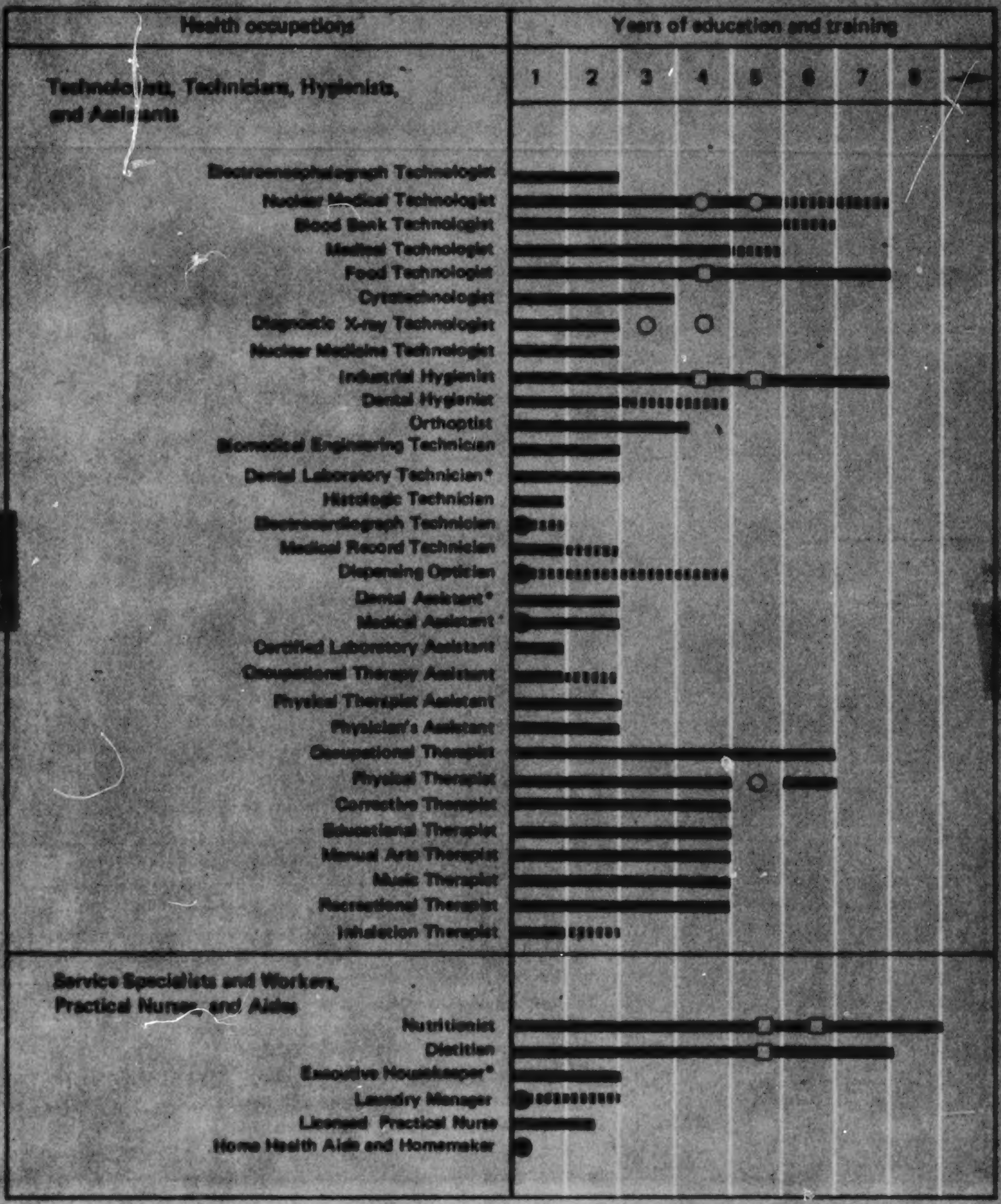
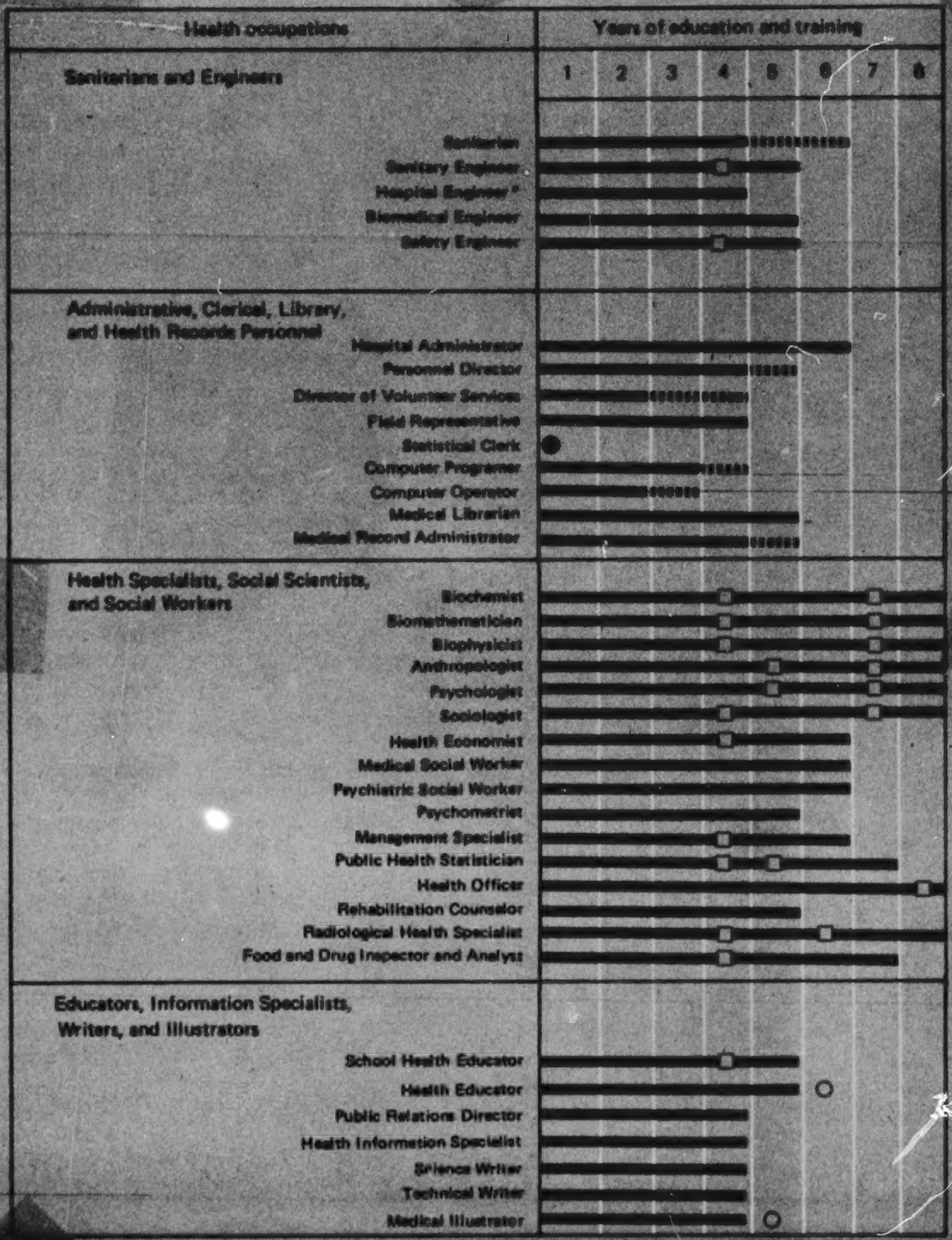
YEARS OF EDUCATION AND TRAINING BEYOND HIGH SCHOOL FOR CAREERS IN SELECTED HEALTH OCCUPATIONS –Continued



See footnote at end of table.

YEARS OF EDUCATION AND TRAINING BEYOND HIGH SCHOOL FOR CAREERS IN SELECTED HEALTH OCCUPATIONS --Continued



... in areas, 1 to 4 years of apprenticeship, a special course, or on-the-job training are acceptable in lieu of formal ... Beginning in 1980, orthotists and prosthetists will be required to have a B.S. in the field.

Source: U. S. Department of Labor, HEALTH CAREERS GUIDEBOOK, 3rd ed., (Washington, D. C.: U. S. Government Printing Office, 1972.

ORGANIZATIONS WHICH HAVE HEALTH CAREER INFORMATION

	Organization	Type of Information
1.	American Hospital Association 840 North Lake Shore Drive Chicago, Illinois 60611	information on hospital educational and training programs and a great deal of knowledge about many aspects of the health professions
2.	American Society of Allied Health Professions One DuPont Circle Washington, D.C. 20036	this association is comprised of 125 universities and professional health associations; it is concerned with educational programs and other aspects of the health professions
3.	ASPIRA, Incorporated 2316 West North Avenue Chicago, Illinois 60647	career counseling to Spanish-speaking people
4.	Department of Allied Medical Professions and Services American Medical Association 535 North Dearborn Street Chicago, Illinois 60610	much experience and information on many aspects of many health professions
5.	Division of Associated Health Professions U.S. Department of Health, Education, and Welfare Federal Building, Room 416 9000 Rockville Pike Bethesda, Maryland 20014	current information on equivalency and proficiency examinations in the health professions and information on federal and other developments in the health professions
6.	Board of Higher Education State of Illinois 119 South Fifth Street, Room 500 Springfield, Illinois 62701	information on health-related educational programs in Illinois 4-year colleges and universities
7.	Illinois Community College Board 544 Iles Park Place Springfield, Illinois 62718	information on Illinois community (junior) college educational programs
8.	Illinois Hospital Association 1200 Jorie Boulevard Oak Brook, Illinois 60521	has available some health career literature; well informed about the health professions in general, and in regard to Illinois
9.	Medical Opportunities Program 715 South Wood Street, Room 314 Chicago, Illinois 60612 (312) 996-8050	health career information and counseling, primarily to minority students in high school and college

	Organization	Type of Information
10.	Minority Program Office College of Medicine University of Illinois at the Medical Center 1853 West Polk, Room 150 Chicago, Illinois 60612 (312) 996-8952	provides counseling regarding medicine, physical therapy, occupational therapy, dietetics, medical records administration, medical laboratory science, and medical art, primarily to minority students in high school and college
11.	Operation MEDIHC c/o American Hospital Association 840 N. Lake Shore Drive, Room 430 Chicago, Illinois 60611	career counseling and help in finding employment in the health fields for veterans of the military services
12.	Preprofessional Office College of Liberal Arts and Sciences 350 University Hall University of Illinois at Chicago Circle Chicago, Illinois 60680 (312) 966-3366	provides counseling information regarding health careers

ANNOTATED BIBLIOGRAPHY OF

CAREER INFORMATION IN THE HEALTH PROFESSIONS

1. Council on Medical Education, American Medical Association. Allied Medical Education Directory, 1974, 441 pp. $2.25

Write: Order Department
Council on Medical Education
American Medical Association
535 Norht Dearborn
Chicago, Illinois 60610

annual directory (published in the fall) of AMA-approved educational programs throughout the nation in 24 allied health professions.

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2. Board of Higher Education, State of Illinois. Health Program Directory, 1975, free

Write: Board of Higher Education
State of Illinois
119 South Fifth Street
Room 500
Springfield, Illinois 62701

authorative directory of Illinois educational programs in the health fields.

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3. Illinois Hospital Association, Nursing, 1973, free

Write: Illinois Hospital Association
1200 Jorie Boulevard
Oak Brook, Illinois 60521

leaflet describing four educational routes to a nursing career

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4. Kinsinger, Robert E., editor. Career Opportunities for Technicians and Specialists: Health Technicians, Chicago: J.G. Ferguson Publishing Company, 6 N. Michigan Avenue, 60602, 1974, 364 pp. $12.95

the best general source of student and counselor allied health career information for technician-level positions (usually requiring 1 or 2 years of post-high school education for entry) - well illustrated

BIBLIOGRAPHY, Continued

5. National Health Council, Inc. 200 Ways to Put Your Talent to Work in the Health Field, 1974, Single copies free

Write: National Health Council, Inc.
1740 Broadway
New York, New York 10019

brochure which briefly describes a large number of health careers

6. Odgers, Ruth F., and Wenberg, Burness G., editors. Introduction to Health Professions, St. Louis: the C.V. Mosby Company, 11830 Westline Industrial, 63141, 1972, 207 pp. $5.25

excellent general information on the health professions, particularly stressing those fields requiring a bachelor's degree or more education for entry

7. U.S. Department of Labor. Health Careers Guidebook, 3rd edition, 1972, 166 pp. $2.25

Write: U.S. Government Printing Office Bookstore
219 South Dearborn
Chicago, Illinois 60604

the best single source of general career information on the health professions

8. Weiss, Laura Burnstein, and Spence, Ann Bennett. A Guide to the Health Professions, 1973, 212 pp. $5.00

Write: Office of Career Services & Off-Campus Learning
Harvard University
Cambridge, Massachusetts 02138

excellent discussions of trends in health professions requiring a bachelor's degree or more education; good bibliography

9. Richards Rosen Press, Inc.
29 East 21st Street
New York, New York 10010

publishes a series of useful books on a number of health professions

10. Vocational Guidance Manuals
235 East 45th Street
New York, New York 10017

publishes a series of useful books on a number of health professions

11. Science Research Associates
259 East Erie Street
Chicago, Illinois 60611

publishes large series of good health professions briefs, entitled "SRA Occupational Briefs"

Dentist

Basically, the job of the dentist is twofold: To treat ailments or abnormalities of the gums and teeth; and to try to prevent their occurrence or recurrence. He locates and fills cavities, extracts teeth if necessary, straightens crooked teeth, treats gum and mouth diseases, prepares the mouth when artificial teeth become a necessity, and provides dentures to meet the individualized needs of each patient.

The modern dentist is also interested in his patient's general health. He may detect symptoms which call for a physical checkup and work closely with the family physician to correct the trouble. He often works with school nurses and health departments in prevention programs.

Specialization and Prospects

Most dentists are in private practice, they have their own offices and charge fees for their services. Most of them provide a wide range of general care. However, there are a good many dentists who have taken additional professional training in a specialty field and who limit their practice to a specialty area. The eight recognized specialties in dentistry are:

- Endodontics (root treatment).
- Oral pathology (diseases of the mouth).
- Oral surgery (surgery of the mouth).
- Orthodontics (teeth straightening).
- Pedodontics (children's dentistry).
- Periodontics (treatment of the tissues or gums supporting the teeth and the underlying bone).
- Prosthodontics (making of artificial teeth or dentures).
- Public health dentistry (preventing and controlling dental diseases and promoting dental health through community efforts).

A dentist may choose to take a salaried post instead of going into private practice. For those who do, there are opportunities in industry, in hospitals, with one of the branches of the Armed Forces, the Veterans' Administration, public health, or dental research.

One special aspect of dentistry—dental public health—has been gaining wide recognition in recent years. This is concerned mainly with the preventive aspects of dental care and with public education on dental health and dental health services. The health department of most States and many localities, as well as the U.S. Public Health Service, carry on programs of this kind.

There is also growing interest in dental research. Several independent scientific societies, such as the American Association for the Advancement of Science and the International Association for Dental Research, encourage and promote investigations of oral disease. Hospitals, government agencies, and schools now have laboratories concerned with dental research.

Dentists will also find teaching opportunities in dental schools, and those interested in research will also want to become associated with a teaching center. Teaching and research are often combined on a part-time basis with either private or salaried practice.

Personal Qualifications

Good grades, especially in the sciences, and good eyes and skillful hands are prerequisites for dentistry. College students interested in testing their potentialities for dentistry may want to take advantage of the American Dental Association's Admission testing program.

The prospective dentist should also be in good health and have a genuine liking of people; he will be seeing them very frequently in pain and under great strain.

There is no reason why young women should not go into dentistry. Even though they have been in the minority, many more could find a place in the profession. (Currently, about 98 percent of the Nation's dentists are men.)

Education and Licensing

A student interested in dentistry should start early in planning for his career. Applicants for dental school must have a minimum of 2 years at an approved liberal arts college. Three or four years are required by many schools, and at the present, 75 percent of the students enrolled in dental schools have completed 4 years or more of preprofessional education prior to admission.

Both high school and college courses should be selected carefully, with emphasis on scientific subjects. Prospective dental students should seek guidance from faculty members. They are encouraged to write for advice to the admissions officer of the dental school they plan to attend.

Because dentistry takes a special combination of qualifications, dental schools require applicants to take a standard admission test. The details of this examination are explained as soon as an application is received; it is to the student's advantage—as well as the schools'—to learn without delay whether or not he has the necessary aptitudes.

Good grades in high school and college weigh heavily. All dental schools in this country offer a 4-year course leading to a degree of doctor of dental surgery (D.D.S.) or doctor of dental medicine (D.M.D.). The profession and licensing agencies do not make a distinction between these degrees.

Before a dental school graduate can practice, he must pass an examination given by the board of dental examiners in his State. Annual registration is required in some States. A number of States have reciprocal arrangements recognizing licenses issued in other States. Some may require a practical examination.

The American Dental Association conducts the National Board of Dental Examiners. This board gives written examinations accepted in lieu of written State tests in all States except Delaware and Florida. All clinical and practical examinations are administered by State boards.

Dentists who plan to specialize, teach, or do research may continue their education with postgraduate courses, or they may enter a hospital as a dental intern or resident. There is a nationally recognized examining board for each of the dental specialties. To become a diplomate of a specialty board, the candidate must have at least 2 years of advanced educational training (3 years for oral surgery), meet certain other specific requirements, and pass a comprehensive examination.

Those who look forward to a career in the administration of dental public health programs will need to supplement their dental training and basic experience with an additional year's study leading to the degree of master of public health.

The Dentist's Future

Dentists starting out in private practice must face the fact that financial sledding may be difficult the first few years. Office equipment may cost several thousand dollars. Office hours will probably be long and irregular, at least in the beginning. Being one's own employer means shouldering responsibility for office rent, assistants' salaries, and so on. However, private practice offers good income and other long-term satisfactions.

A staff post in a health agency may not offer the potential earnings of private practice, but it does have the advantage of substantial economic security. An added advantage is the opportunity for promoting good health through community service.

Whether the dentist selects private practice, an institutional position in industry or a hospital, or public health service, he will find the investment in dentistry has been well made. He will be working in a highly respected and well-paying profession and have the satisfaction which comes from bringing healing and well-being to people. He can also count on a long period of usefulness.

The demand for dental services is much greater than the supply. Many dentists work more than the customary 40-hour week, and still cannot catch up with their waiting lists. Nearly half of the patients have to wait a week for their first appointment, and in general there is a great backlog.

Dentists in private practice have a wide range of income. Specialists tend to make more money than dentists in general practice, while dentists in middle-sized cities tend to earn more than those in either large metropolitan centers or very small communities. In general, most dentists in private practice have substantially higher earnings than do those in salaried positions.

For further information, write to:
American Dental Association
Council on Dental Education
211 East Chicago Avenue
Chicago, Illinois 60611

EDUCATIONAL PROGRAMS IN DENTISTRY - ILLINOIS

(Prerequisite: At least 2 years, and commonly 4 years, of college with and emphasis on the sciences)

Required Special Training: 4-year professional program in a college of dentistry

Dentist

School of Dentistry
Loyola University
Chicago 60611

Dental School
Northwestern University
Chicago 60611

School of Dental Medicine
Southern Illinois University
Edwardsville 62025

College of Dentistry
University of Illinois at the Medical Center
Chicago 60612

Working with both patient and dentist, the dental assistant has a variety of responsibilities in the dentist's office. The duties of a dental assistant include both secretarial and technical tasks.

The dental assistant is responsible for maintaining accurate billing and appointment records for the dentists as well as keeping medical files up-to-date. In addition, patients are greeted and prepared for treatment by the dental assistant. This might include having X-rays taken by the dental assistant before the patient is seen by the dentist. In some states the dental assistant is legally permitted to place dental film in the mouth and expose X-rays as well as develop them and mount them properly for viewing.

In the laboratory the dental assistant may assist the dentist in making molds of teeth and pouring casts of inlays and crowns. In some cases the role of the dental assistant is expanding into other work settings such as the hospital operating room, the out-patient clinic, and in the treatment of handicapped patients.

In the dentist's office, however, the primary function of the dental assistant is to aid the dentist chairside, passing him instruments and materials while mixing fillings and preparing solutions for him. The sterilization and proper arrangement of the instruments constitutes a major responsibility of the dental assistant.

Qualifications and Education

Because of the close contact between the dental assistant and patients, a warm, friendly personality is needed for this type of work. Secretarial and bookkeeping skills are also an asset. Students interested in becoming dental assistants ought to be able to master tasks requiring skillful use of the hands and fingers. In addition, good physical and dental health as well as personal cleanliness are necessary.

While in high school, students involved in dental assisting might find it helpful to take some science and secretarial classes.

Junior and community colleges, technical institutes, schools of dentistry, and universities offer dental assistant training. Some dentists, however, are willing to take on students with good potential and offer them on-the-job training. Whether training is obtained on-the-job or in a school, a high school diploma is essential. Community college programs are 1 or 2 years long and award either a certificate in dental assisting or an associate degree in applied science. Evening classes are occasionally offered for those employed during the day although the course of study will be longer as classes meet less frequently.

EDUCATIONAL PROGRAMS IN DENTAL ASSISTING - ILLINOIS

(Prerequisite: High school diploma or its equivalent for admission to college and university programs in dental assisting)

Required Special Training: 1 or 2-year dental assisting program in a community college, technical institute, school of dentistry, or university

Dental Assistant

Black Hawk College
Moline 61265

Bryman School
Chicago 60603

College of Lake County
Grayslake 60030

Elgin Community College
Elgin 60120

Illinois Valley Community College
Oglesby 61348

Kaskaskia College
Centralia 62801

Lake Land College
Mattoon 61938

Lewis and Clark Community College
Godfrey 62035

Loop College
Chicago 60601

Loyola University, School of Dentistry
Maywood 61053

Midstate College
Peoria 61602

Morton College
Cicero 60650

Olney Central College
Olney 62450

Parkland College
Champaign 61820

Prairie State College
Chicago Heights 60411

Robert Morris School
Carthage 62321

Rock Valley College
Rockford 61101

Triton College
River Grove 60171

Paradental Education
University of Illinois
College of Medicine
Chicago 60612

Waubonsee Community College
Sugar Grove 60554

DENTAL ASSISTING - Further Information

Employment Prospects

In 1974 there were approximately 125,000 dental assistants in the nation; it was not possible to determine the number employed in Illinois. Except for those men who served as dental assistants in the armed forces, more than ninety per cent of civilian dental assistants were women. In 1974 the employment outlook was good and was expected to remain so for the next ten years.

Salary

Starting salaries for trained dental assistants working in dentists' offices in Chicago were from $135-$150 per week in 1975. In other areas of Illinois beginning salaries for trained persons were about $80-$100 per week, and experienced assistants earned up to about $125 per week. Dentist-trained assistants with no formal training earned less than those with formal training. Salaries for those working in dental schools, in civil service, and other employment settings ranged from approximately $8,000-$14,000 yearly.

Career Mobility

It is not unusual for dental assistants to return to college for additional education to become dental hygienists or dental laboratory technicians. It is rare for an assistant to return to college and dental school for training as a dentist. Dental hygiene is an attractive possibility for persons wanting to work part-time.

Further Reading

The Dental Assistant, a journal published by the American Dental Assistants' Association

Kinsinger, Robert E., editor, Health Technicians, J.G. Ferguson Publishing Company, Chicago, 1970, pp. 54-61

Professional Organization Where More Information May Be Obtained

American Dental Assistants' Association
211 East Chicago Avenue, Suite 1224
Chicago, Illinois 60611

To Broaden Your Understanding

- -talk with a dental assistant in your dentist's office
- -talk about dental assisting with your dentist
- -write to schools and the professional organization

DENTAL HYGIENIST

Dental hygienists work very closely with dentists in providing health care for the teeth and gums. The dental hygienist is the only other person, besides the dentist himself, who is legally allowed to work inside people's mouths.

Working under the supervision of a dentist, the hygienist's duties consist primarily of cleaning and applying fluoride to teeth, polishing fillings and dentures, charting the conditions of the mouth and teeth for diagnosis by the dentist, taking, developing, and mounting X-rays, applying medications as prescribed by the dentist, and giving instruction in dental health education. Hygienists may also be called upon to provide emergency first aid treatment when needed, and for this reason, many hygienists hold First Aid Certificates. Another important duty is that of maintaining an accurate recall system for reminding patients to return for a dental examination.

Although the majority of dental hygienists work in private dental offices, they are found in other settings. Some provide consulting to public school officials regarding student dental health. Others are employed in clinics, industry, voluntary health agencies, and the armed forces. Still others work in special clinics for the physically and mentally handicapped. Overseas employment is also possible because American firms hire hygienists to provide dental services to their American employees as well to help native dentists to organize preventative dental health care facilities.

Qualifications and Education

Students considering a career in dental hygiene should have good eyesight and be able to work well with their hands. Because patients experiencing pain and discomfort may tend to be nervous and anxious, the dental hygienist ought to be able to show an understanding of such feelings and be able to put patients at ease during treatment. Hygienists must also have considerable patience because they will be working with delicate instruments and tools. They must be able to work smoothly with the dentist as well.

A high school diploma or its equivalent is a necessary first step for training as a dental hygienist. Science courses might prove to be useful preparation for dental hygiene education after high school. Students can pursue their training by means of either a two-year or four-year program of study. A two-year program will offer an associate degree or certificate, whereas a four-year program will result in a bachelor's degree from a college or university. Completion of the two-year program is sufficient for a position in a dental office; however, a baccalaureate degree is usually required for a position in public health, a school health program, or for teaching in a school of dental hygiene.

EDUCATIONAL PROGRAMS IN DENTAL HYGIENE - ILLINOIS

(Prerequisite: High school diploma or its equivalent)

Required Special Training: 2- or 4-year dental hygiene program in a community college, school of dentistry, or university. All programs are 2 years in length, except that Loyola University offers a 4-year program. The 4-year program is designed for those students interested in teaching, research, or community health.

Dental Hygienist

Illinois Central College
East Peoria 61611

Lake Land College
Mattoon 61938

Loyola University, School of Dentistry (4-year program only)
Maywood 60153

Northwestern University Dental School
Chicago 60611

Parkland College
Champaign 61820

Prairie State College
Chicago Heights 60411

Vocational Technical Institute
Southern Illinois University
Carbondale 62901

William Rainey Harper College
Palatine 60067

DENTAL HYGIENIST - Further Information

Employment Prospects

In 1974, there was a need for dental hygienists in most parts of the nation. There were limited employment opportunities in a few metropolitan areas and in some areas where there were a large number of educational programs for the training of dental hygienists. Over the next decade, employment prospects appear good as the health care system of the nation continues to expand.

Salary

A salary study conducted by the American Dental Hygienists' Association in the spring of 1973 indicated an average annual salary of slightly more than $10,000 for full-time hygienists. Graduates of four-year dental hygiene programs earned somewhat more than this. The study indicated that hygienists with much work experience received salaries which were only slightly higher than those earned by inexperienced hygienists. In 1974, some dental hygienists in central Illinois earned $40 per working day. A number of dental hygienists worked only part-time, resulting in a wide variation in yearly income.

Career Mobility

Dental hygienists employed in clinical practice may--with experience and, oftentimes, further formal education--become teachers or administrators in dental hygiene education programs in community colleges and four-year colleges. The need for such persons is great. Some hygienists become dentists. While some educational institutions do provide for advanced placement, in 1974 there were no widely-accepted proficiency or equivalency examinations of professional knowledge available to persons wishing to enter dental hygiene, or to hygienists wishing to enter dentistry. Such examinations were being planned, and may in future years permit the qualified person to demonstrate his competence in professional course work, thereby shortening the required training period.

Further Reading

Kinsinger, Robert E., editor, Health Technicians, J.G. Ferguson Publishing Company, Chicago, 1970, pp. 44-53.

Odgers, Ruth F., and Wenberg, Burness G., editors, Introduction to Health Professions, C.V. Mosby Company, St. Louis, 1972, pp. 79-84.

Dental Hygiene, a journal published by the American Dental Hygienists' Association

Professional Organizations Where More Information May Be Obtained

American Dental Hygienists' Association
211 East Chicago Avenue
Chicago, Illinois 60611

To Broaden Your Understanding

-talk with a dental hygienist in a dentist's office

-talk about dental hygiene with your dentist

-write to schools and the professional organization

DENTAL LABORATORY TECHNICIAN

It is the responsibility of the dental laboratory technician to make and repair dentures, crowns, bridges, inlays, and other orthodontic appliances once made by dentists. The technician does not work directly with patients but rather under the supervision or following the prescription of a dentist.

In making many dental appliances, the technician forms models in hard plaster from impressions of the patient's mouth taken by the dentist. The chief duties of the dental laboratory technician include making metal castings for dentures and polishing them, constructing metal or porcelain crowns or inlays for partially destroyed teeth, fabricating bridges of gold and other metals, and making appliances to correct abnormalities such as cleft palate.

Whereas some technicians perform a wide range of duties, others specialize in the making of crowns and bridges, or in the arrangement of artificial teeth on dental appliances. Ceramists or porcelain specialists make natural-looking teeth from porcelain to replace missing teeth or to fit over natural teeth.

Dental laboratory technicians may find employment in a variety of work settings such as dental clinics, commercial laboratories, hospitals providing dental services, and Veterans Administration hospitals. Dental materials and equipment manufacturers also employ dental laboratory technicians. as technical representatives or salesmen.

Qualifications and Education

A high degree of manual dexterity as well as good color perception, patience, and a liking for detailed work rank among the personal qualifications necessary for this field. Ceramists must have exceptionally good eyesight and be able to match color shades with perfection. Being able to follow instructions precisely is also important, since everything a dental technician constructs must follow the dentist's specifications.

There are no minimum formal education requirements needed to enter this field, although a high school diploma is helpful. Students interested in learning this skill through on-the-job training can work as an apprentice for three to four years depending upon their ability and previous experience. An alternate route requiring a high school diploma or its equivalent is enrollment in a 2-year program in dental laboratory technology, usually offered at junior or community colleges or vocational-technical schools.

EDUCATIONAL PROGRAMS IN DENTAL LABORATORY TECHNOLOGY - ILLINOIS

Required Special Training:	Either a) on-the-job training in dental laboratory technology, which lasts 4 to 5 years [high school diploma not needed], or b) high school diploma or its equivalent plus 2-year dental laboratory technology program offered in a community college or vocational-technical school

Dental Laboratory Technician

Vocational Technical Institute
Southern Illinois University
Carbondale 62901

Triton College
River Grove 60171

DENTAL LABORATORY TECHNICIAN - Further Information

Employment Prospects

In 1975 employment prospects in dental technology were excellent for both men and women. A recent government survey predicted that in 1980 there might be a need for 10,000 more dental technicians than would have completed training. Since that survey, many employees have adopted dental insurance programs for their workers, resulting in an even greater demand for the services of the dental technician.

Salary

In Illinois in 1975, students who graduated from high school and went directly to the dental laboratory for on-the-job training received starting salaries of from $65 to $110 per week. Graduates of 2-year college dental technology programs received starting salaries of from $120 to $200 per week. Those experienced technicians who worked in a dental laboratory for more than two years made from $220 to $300 per week. Some earned $25,000 per year or more. Dental laboratory managers and owners earned up to $25,000 and more a year.

Career Mobility

Graduates of 2-year college dental technology programs and those who have had successful work experience as dental technicians may advance to head the departments of larger dental laboratories. In addition, it may be possible for them to become managers or owners of dental laboratories. There are opportunities for experienced technicians to become instructors in 2-year college dental laboratory technology education programs. Technicians who receive on-the-job training rather than the 2-year college training have poorer chances for advancement. Often times they are trained in only one phase of dental laboratory work, and therefore, are restricted from entering other aspects of laboratory work.

Further Reading

Kinsinger, Robert E., editor, Health Technicians, J.G. Ferguson Publishing Company, Chicago, 1970, pp. 60-69

NADL Journal, a journal published by the National Association of Dental Laboratories

Professional Organizations Where More Information May Be Obtained

Council on Dental Education
American Dental Association
211 East Chicago Avenue
Chicago, Illinois 60611

Illinois Dental Laboratory Association
550 Frontage Road
Northfield, Illinois 60093

National Association of Dental Laboratories
3801 Mt. Vernon Avenue
Alexandria, Virginia 22305

To Broaden Your Understanding

-talk with a dental laboratory technician (ask your dentist to give you the names of dental laboratories you can contact)

-write to professional organizations and schools

DIETITIAN

A dietitian applies the science and art of human nutrition to help people select and obtain food to nourish their bodies in health or disease throughout the life cycle. Thus, dietetics is an integral component of health promotion and disease management.

Dietitians are employed in food service (administrative dietitians), and in direct patient care (clinical dietitians or community dietitians). A dietitian can teach, manage, or conduct research. Dietitians are employed in hospitals, medical centers, nursing homes, food service management systems, businesses, government agencies, schools, colleges and universities, and various other agencies and institutions. However, hospitals offer the largest number of career opportunities.

The major types of dietitians are:

Administrative Dietitian

The administrative dietitian affects the nutritional care of people by managing the production of food in a food service system. The food service system gives people excellent care by providing optimal nutrition and quality food. The administrative dietitian does the hiring, training, and supervising of food service employees. This dietitian also purchases food and food service equipment, plans menus, and supervises food production. The administrative dietitian manages the money resources of the dietary department.

Clinical Dietitian

The clinical dietitian is a member of the health care team. He/she works with other health professionals in treating patients. The clinical dietitian evaluates the patient's nutritional needs, and designs and carries out a plan for improving his/her health. The patient's progress following the care plan is evaluated in a written report which is added to the medical record.

When functioning in an organization that provides food service, the clinical dietitian coordinates activities with the food service department. The clinical dietitian counsels individuals and families on nutritional principles and dietary plans. The factors used in counseling are the patient's knowledge about food selection, income level, and life style. The clinical dietitian participates in health team rounds and serves as a consultant to other health professionals regarding nutritional care.

Community Dietitian

The community dietitian works for public health, educational, and private agencies, in clinics, in outpatient departments of hospitals, and in informational sections of food industries. He/she counsels individuals and families regarding nutritional principles, diet, food selection, and economics. Each teaching session is adapted to the individual's life style and nutritional needs. The community dietitian works with organizations which are concerned about the nutritional needs of individuals and groups within the community.

General Dietitian

A dietitian who functions as a clinical and administrative dietitian may be classified as a general dietitian. A dietitian functioning both administratively and clinically would probably be located in a smaller hospital or health-related facility.

Qualifications and Education

Persons looking forward to becoming dietitians should have a sincere interest in people. The ability to communicate with others and understand their problems and needs are highly important skills. They should have an interest in foods and cooking, and enjoy teaching. Also essential is a special aptitude for sciences, especially biology and chemistry.

A college education is required, emphasizing foods and nutrition related to sciences and institutions management. Courses in the behavioral sciences, such as psychology, sociology, and teaching are also studied.

There are several methods by which the undergraduate may become a dietitian. One is through a major in college in foods and nutrition, generally in home economics. This is followed by a six month to one year dietetic internship to gain practical experience. Internships enable the student to select an area of specialization: general, management, clinical, or community. The dietetic traineeship is another method for the dietitian to receive practical experiences. It is an individualized experience program from 12 to 24 months in length. These traineeships are usually found in hospitals and food service systems. Another route to becoming a dietitian is through a coordinated undergraduate program. In such programs, classroom and practical experiences are coordinated in a four-year bachelor's degree program. The same areas of specialization offered in internships are offered in coordinated undergraduate programs. These coordinated programs are located in schools of home economics, or in schools of medicine and health sciences at many colleges and universities.

Dietitian

Special Required Training:	Either a) a bachelor's degree in dietetics, medical dietetics, or home economics with an emphasis in foods and nutrition or institutional management, followed by a dietetic internship of 6 to 18 months (depending on the sponsoring clinical facility) or an individualized dietetic traineeship of 12 to 24 months, or b) a bachelor's degree program in dietetics which has a "coordinated" curriculum in which academic and clinical experiences are combined in a 4-year program.

Persons interested in dietetics should contact universities in which they are interested and ask them if they have bachelor's degree programs in any of the following:

dietetics

foods and nutrition

food science

hospital dietetics

institutional management

medical dietetics

nutrition

restaurant management

All of these terms describe college major areas of study which may give you the academic preparation to 1) become a dietitian, or 2) be admitted to a dietetic internship or traineeship.

Below are listed only educational programs in dietetics. Students interested in becoming dietitians should not limit themselves to considering only these educational programs; instead, they should also keep in mind the programs listed above: for example: foods and nutrition, etc.

EDUCATIONAL PROGRAMS IN DIETETICS - ILLINOIS, Continued

College or University	Degree Program
*Bradley University Peoria 61606	Bachelor's Degree
Curriculum in Medical Dietetics School of Associated Medical Sciences University of Illinois at the Medical Center Chicago 60612	Coordinated Undergraduate Program in Clinical and Community Dietetics, Bachelor's Degree
*Eastern Illinois University Charleston 61920	Bachelor's Degree
*Mundelein College Chicago 60626	Bachelor's Degree
Northern Illinois University Dekalb 60115	Coordinated Undergraduate Program in General Dietetics, Bachelor's Degree
*Olivet Nazarene College Kankakee 60901	Bachelor's Degree
*Rosary College River Forest 60305	Bachelor's Degree
College of Nursing and Allied Health Sciences Rush University Chicago 60612	Master's Degree
*Southern Illinois University Carbondale 62901	Bachelor's and Master's Degree
*School of Human Resources and Family Studies University of Illinois Urbana 61801	Bachelor's and Master's Degree

*In order to become a registered dietitian, these bachelor's degree programs must be followed by dietetic internship or traineeship.

Employment Prospects

In 1974 employment prospects for dietitians were generally good in Illinois. There were excellent job prospects in downstate Illinois; the situation in Chicago was fluctuating. Nationally it appeared that there were insufficient numbers of dietitians. In 1972 an American Dietetics Association publication reported that there were about 30,000 practicing dietitians in the nation and that at least 10,000 more dietitians were needed by 1980.

Salary

A 1973 salary study conducted by the Illinois Hospital Association indicated that dietitians in Illinois hospitals had starting salaries of almost $800 per month. Average salaries of all hospital dietitians were $875 per month. Salaries were somewhat higher in the Chicago area than elsewhere in the state.

Career Mobility

The majority of dietitians are employed in hospitals. Other work opportunities for dietitians include employment as consultants to nursing homes, as administrators of dietary services, as teachers of dietetic education in colleges and universities, and as researchers. A combination of relevant work experience and graduate level education is desirable to gain access to these areas of the profession.

Dietetic technicians (with two years of community college course work) wishing to become dietitians must complete a bachelor's degree program in a college or university. The college or university will evaluate prior course work to determine what additional course work will be needed. In 1974 there were no proficiency or equivalency examinations of professional knowledge available to persons wishing to become dietitians, nor were any being developed.

Further Reading

American Dietetic Association, The Profession of Dietetics, The Report of the Study Commission on Dietetics, 1972

Odgers, Ruth F., and Wenberg, Burness G., Introduction to Health Professions, C.V. Mosby Company, St. Louis, 1972, pp.85-94

Further Reading, continued

Journal of the American Dietetic Association, a journal published by the professional dietetic organization

Professional Organization Where More Information May Be Obtained

American Dietetic Association
620 North Michigan Avenue
Chicago, Illinois 60611

To Broaden Your Understanding

-look into summer or part-time work in a hospital, restaurant, public health department, or welfare program

-talk with dietitians working in a hospital, food service, public health department, welfare agency, food processing company, airlines, etc.

-write to schools and the professional organization

Dietetic Technician

The dietetic technician is involved directly in food administration and nutrition care services.

The duties in food administration may include quality food production, developing standard recipes, managing a cafeteria, and training of personnel. The duties in nutrition care may include taking diet histories of patients, calculating modified diets, teaching patients normal nutrition, and visiting patients to evaluate the food.

Duties vary with the size and organization of the department of dietetics. In a large hospital, the dietetic technician works under the supervision of a dietitian. In a small hospital or related health facility, the dietetic technician is responsible for total food service to patients and works under the direction of a consulting dietitian or an administrator.

Dietetic technicians are in demand by hospitals and related health facilities. More recently, they have become engaged in teaching low-income families about food purchasing, preparation, and nutrition; directing food service in day care centers; and assisting nationals of other countries in adapting their menu patterns and in purchasing and preparing. These duties are performed under the direction of a nutritionist.

Qualifications and Education

An appreciation of quality food, interest in people, and skill in management are desirable qualifications for the dietetic technician. Preparation as a dietetic technician requires either successful related work experience or a 2-year associate degree program in a community college.

Dietetic Technician

Required Special Training: Either a) experiences which prepare him/her as a skilled worker in food service, or b) a high school diploma or its equivalent and a two-year associate degree program for training as a dietetic technician.

Central YMCA Community College
Chicago 60606

William Rainey Harper College
Palatine 60067

Malcolm X College
Chicago 60612

Employment Prospects

A 1972 publication of the American Dietetic Association stated that there was a need for a great increase in the number of dietetic technicians in the coming years. In 1974 there was a strong need for dietetic technicians, and it appeared that that need would continue in future years.

Salary

No current salary information was found. A 1970 publication indicated that beginning salaries for technicians around the nation averaged between $5,200 and $6,000 annually, and that those with five years of experience earned between $8,000 and $10,000 yearly.

Career Mobility

The dietetic technician may assume greater responsibility through working experience. As an example, the technician may be promoted to the position of kitchen manager, responsible for the preparation and quality of food. In other cases, the technician may gain administrative authority over the entire food service, or possibly only over scheduling, hiring, and firing of employees.

Dietetic technicians (with two years of community college course work) wishing to become dietitians must complete a bachelor's degree program in a college or university. The college or university will evaluate prior course work to determine what additional course work will be needed. In 1974 there were no proficiency or equivalency examinations of professional knowledge available to persons wishing to become dietitians, nor were any being developed.

Further Reading

American Dietetic Association, The Profession of Dietetics, The Report of the Study Commission on Dietetics, 1972

Odgers, Ruth F., and Wenberg, Burness G., Introduction to Health Professions, C.V. Mosby Company, St. Louis, 1972, pp. 85-94

Kinsinger, Robert E., editor, Health Technicians, J.G. Ferguson Company, Chicago, 1972, pp. 233-243

Professional Organization Where More Information May Be Obtained

American Dietetic Association
620 North Michigan Avenue
Chicago, Illinois 60611

To Broaden Your Understanding

- -look into summer or part-time work in a hospital, restaurant, public health department, or welfare program
- -talk with dietetic technicians working in a hospital, food service, public health department, welfare agency, food processing company, airlines, etc.
- -write to schools and the professional organization

Hospital Administrator

Whether the hospital is large or small, it must have an executive or administrator to take overall charge of the institution and to coordinate all its services.

The administrator's task is to see that all the hospital's objectives are carried out. He is directly responsible to the hospital's governing body, a group of community-minded men and women who set the broad policies under which the hospital operates.

The administrator is responsible for developing an effective team of physicians, nurses, dietitians, pharmacists, housekeepers, engineers, and others who work in the hospital and for seeing that adequate supporting facilities, services, and equipment are available. He holds a community trust; it is his obligation to see that the hospital provides an acceptable health services program.

The administrator must be well informed about all hospital functions and services and equipped to select and supervise the staff members who are in charge of all its departments. He must be aware of community health needs and health planning. He is concerned not only with the professional services needed to provide patient care services but also with those required for business and office operations, personnel management, public relations, volunteer service, purchasing, engineering and maintenance, and housekeeping.

He must be able to cope with the special situations and emergencies which arise daily in every hospital; he must be prepared to handle unexpected demands practically around the clock.

The administrator may have one or more assistants. In the larger hospitals, the administrator's executive staff is in charge of a major aspect of hospital service. The assistants frequently carry on special studies and prepare reports to help the administrator make his final decisions or recommendations to the governing board.

Most hospitals today, especially the larger ones, prefer to draw their administrative staff from the graduates of these schools. Beginners with a master's degree in hospital administration are usually appointed as administrative assistants or as hospital department heads. Both government and nongovernment institutions offer such positions.

Qualifications and Education

The young man or woman who wants to become a hospital administrator needs the basic capacities required for administrative work in any field. He or she should also have good health, vitality, the ability to work under pressure, and a sincere interest in hospital work.

Requirements include college graduation followed by a master's degree in hospital administration.

College work should be planned to include courses in economics, finance, statistics, psychology, and personnel administration. It would be wise to write several schools of hospital administration for advice about required or recommended subjects.

The graduate programs consist of a 2-year course of study. In some cases, a year in "administrative residence" in a hospital is included. Graduates of the 2-year program receive a master's degree in hospital administration.

Required Special Training: A 4-year bachelor's degree program in hospital or health services administration is necessary for assistant-level positions in hospital administration, and is sufficient for a variety of administrative positions in the health field. Generally, a master's degree in hospital or health services administration is required for the position of hospital administrator, and for a variety of higher-level administrative positions in the health field.

Center for Health Administration Studies Graduate School of Business University of Chicago Chicago 60637	(Master's degree in Business Administration and Health Administration)
Graduate School of Management Northwestern University Evanston 60201	(Master's degree in Management of Hospitals and Health Services)
Sangamon State University Springfield 62708 (begins at the 3rd year college level)	(Bachelor's degree in Health Services Management; Master's degree in Health Administration)
Governor's State University Park Forest South 60466 (begins at the 3rd year college level)	(Bachelor's degree in Environmental Science with an orientation in Health Services Administration; Master's degree in Environmental Science with an orientation in Health Services Administration)
University of Illinois at Chicago Circle Chicago 60607	(Ph.D. in Bioengineering with a concentration in Health Care Delivery)

Employment Prospects

Due to the expansion of educational programs for the training of hospital administrators, in 1974, nationally, a significant number of new graduates of these programs had some difficulty finding employment. However, with the likely coming of some form of national health insurance, future employment for administrative personnel in hospitals and other types of health care facilities appeared favorable.

Salary

In 1974, graduates of master's degree programs in hospital administration received beginning annual salaries averaging $14,000 to $16,000. Salaries in smaller communities and for positions of less responsibility were usually lower than salaries in larger communities and for positions of greater responsibility. A 1972 salary survey showed that the national average (median) base salary for chief administrators of 150-249-bed hospitals was $25,000-$30,000. The same survey found that administrators of smaller hospitals tended to earn considerably less, and those in larger hospitals had substantially higher salaries.

Career Mobility

Those with bachelor's and master's degrees in hospital or health services administration usually find their first hospital job as an administrative assistant or department head. Successful work experience is necessary for advancement to the positions of assistant administrator or chief hospital administrator. Persons interested in becoming the chief administrator should possess a master's degree as well.

Graduates of hospital or health services administration bachelor's and master's degree programs are not limited to hospitals in their search for employment. Increased federal involvement in creating a more comprehensive health care system has resulted in the development of health maintenance organizations (HMO's), comprehensive health planning agencies, and long-term care institutions. There are an increasing variety of employment opportunities in such organizations, as well as in professional health associations, state departments of health, and health insurance companies.

Further Reading

Hospitals, Journal of the American Hospital Association

Modern Health Care, a journal published by McGraw-Hill Book Company, Inc.

Odgers, Ruth F. and Wenberg, Burness G., Introduction to Health Professions, The C.V. Mosby Company, St. Louis, 1972, pp. 151-57

Professional Organizations Where More Information May Be Obtained

American College of Hospital Administrators
840 North Lake Shore Drive
Chicago, Illinois 60611

Association of University Programs in Hospital Administration
One Du Pont Circle
Suite 420
Washington, D.C. 20036

To Broaden Your Understanding

-write for information from: Comprehensive State Health Planning Agency
160 N. LaSalle Street, Suite 1627
Chicago, Illinois 60601

-obtain the name of a nearby health planner from the Comprehensive State Health Planning Agency and visit him/her

-talk to a local hospital administrator about his/her work and that of his/her staff

-write to professional organizations and schools

HEALTH PLANNER

In 1966 Congress passed a law known as the "Partnership for Health Act" to help states and regions within states to establish and carry out plans to provide better environmental and personal health care. The many comprehensive health planning agencies that have developed throughout the nation are designed to take positive action to redirect our health resources so that all people will receive complete medical care.

The health planner (also called the comprehensive health planner) directs the work of comprehensive health planning agencies. Specifically, he/she deals with the problems which groups of people have in acquiring adequate medical facilities in their communities. Typical of his work would be to resolve matters such as: deciding where to locate a new drug abuse treatment center, providing incentives for doctors so that they will serve rural populations, and maintaining quality control over hospital medical services.

Health planners are employed both by government as well as by private organizations dealing with affairs at the international, national, state, or local levels. Many health planners work in comprehensive health planning agencies, of which there are generally several in each state.

Qualifications and Education

Health planning is a complex matter. Therefore, persons interested in this field must be able to think analytically, organize effectively, make decisions on controversial questions, and successfully negotiate among differing viewpoints.

More than twenty universities in the country offer master's and/or doctoral degrees in health planning. Master's degree programs vary in length from 9-29 months. Only two universities (neither of which is in Illinois) have bachelor's degree programs in health planning.

Students interested in Illinois educational programs in health planning may contact those programs listed on pages 4-A-2 and 9-A-2 to learn which are appropriate to their interests.

HEALTH PLANNER - Further Information

Employment Prospects

In 1975 employment prospects for health planners were not good, but with the implementation of Health Service Agencies (HSA's) in 1976, it was expected that job opportunities would improve considerably. (In 1975 HSA's replaced comprehensive health planning agencies as the nation's federally authorized health planning units.)

Salary

Beginning health planners with master's degrees earned $12,000-$14,000 per year in 1975. Those with mid-level administrative responsibilities received $20,000-$25,000, and experienced top-level administrators had incomes of up to $30,000 and more.

Career Mobility

Health planners enter the field with varied educational backgrounds. There is an increasing need for planners with educational and work experience which is focussing either on management skills or on data analysis skills. Capable, experienced persons may advance to positions of increased responsibility and higher income.

Further Reading

American Journal of Public Health, a journal published by the American Public Health Association

Medical Care, a journal published by the American Public Health Association

Professional Organization Where More Information May Be Obtained

Health Planning Section
American Public Health Association
1015 18th Street, N.W.
Washington, D.C. 20036

To Broaden Your Understanding

-visit a health planner in a health planning agency, hospital, public health department, or other agency, and discuss his/her work

-obtain paid or volunteer work in an agency which carries out health planning activities

-write to schools and the professional organization

MEDICAL LABORATORY OCCUPATIONS

The physician has available to him a number of tests and devices with which he can make a general appraisal of a patient's condition—taking the patient's pulse, temperature, and blood pressure; listening to the heart and lungs with a stethoscope; looking into the nasal passages with a nasoscope or into the eyes with an ophthalmoscope.

With these he can detect gross changes in the functioning of the various organs and, in most common illnesses, make a diagnosis.

But there are many illnesses where the symptoms are not so easily detectable. These are illnesses in which there are changes in the body fluids and tissues not discernible by the naked eye or ear. They include chemical changes in the blood, urine, lymph; increase or decrease in the blood count for the various types of white or red blood cells; microscopic changes in the structure of the cells of a diseased tissue or organ; and the presence of parasites, viruses, or bacteria in the blood or diseased tissue.

To detect these the physician must submit specimens of blood, urine, or tissue to a variety of highly technical tests in the laboratory. Combining laboratory findings with other observations, he is then able to make an exact and accurate diagnosis.

Laboratory examination of body fluids and tissues serve other purposes as well. Blood tests must be made to determine blood types in the event of a blood transfusion. There are certain blood types which, if mixed in conception, will produce abnormal offsprings. These can be detected by laboratory tests. Some individuals react with violent allergic reaction to different kinds of medications, and laboratory tests are used to detect this type of sensitivity.

Aside from tests such as these, the physician also relies on electronic devices which detect abnormal functioning in bodily organs—the electrocardiogram for heart disorders and the electroencephalograph for neurological disorders.

Although the physician must have the results of these tests for evaluation and diagnosis, he does not perform them himself. They are performed by medical technologists and technicians in medical laboratories, under the supervision of medical specialists known as pathologists.

MEDICAL TECHNOLOGIST

The medical technologist performs laboratory tests to determine the presence or absence of disease. Laboratory tests alone are sufficient for identification of some disease, while in other cases they are used to confirm suspected disease. Laboratory analysis of specimens is accomplished by means of highly complex machines.

The medical technologist who works in a medical laboratory is supervised by a pathologist, a physician specializing in the study of disease. In addition to performing laboratory tests, many medical technologists have considerable supervisory responsibilities over the laboratory technicians and assistants who in many cases actually do the tests. Those technologists employed in small laboratories function in most all areas of laboratory work, but in large facilities, they may specialize in only one or two areas.

Following is a list of laboratory activities performed and/or supervised by the medical technologist:

- matching blood samples of donors and recipients in blood transfusions;
- growing "cultures" and identifying the bacteria found in a patient's blood, sputum, feces, or discharge from a sore or wound;
- searching for and identifying, tapeworms, pinworms, and other parasites living in the body;
- testing for the presence or absence of various chemicals in the blood or other body fluids;
- testing for antibodies and other disease-fighting elements in the blood;
- analyzing urine for evidence of illnesses such as diabetes, infection of the bladder, cancer of the bladder, etc.;
- doing blood tests to detect illnesses of the blood, such as hemophilia, anemia, leukemia, and mononucleosis.

Medical technologists are gaining employment in more diverse work settings. A large number work in commercial medical laboratories. Others are found in clinics, public health departments, pharmaceutical companies, teaching and research facilities, and veterinarians' offices.

Qualifications and Education

Students considering a career in medical technology should have an aptitude in science, enjoy doing laboratory work, and have the ability to do reliable work. Medical technologists should also possess manual dexterity since they work with small instruments and delicate equipment. Other assets include normal vision and the ability to distinguish fine shades of color.

There is more than one way to become a medical technologist. The general requirement is a bachelor's degree stressing biology and chemistry, plus laboratory training. A complete discussion of medical technology educational programs is given on the pages "Educational Programs in Medical Technology - Illinois."

Required Special Training: Either a) 4-year bachelor's degree program including 16 semester hours of biology (4 hours of which must be in microbiology), 16 hours of chemistry, and 1 course in mathematics, plus a medical technology program of at least 1 year in length at a hospital or university or b) a 4-year bachelor's degree in a field other than medical technology, with the science and math course requirements listed under "a" plus 5 years of recent medical laboratory work experience (2 of these 5 years must have been under approved supervision). [Persons with bachelor's degrees in chemistry or biology may find work in hospital laboratories, specializing in chemistry, microbiology, or hematology lab work.]

The above are the requirements for training as a medical technologist which have been established by the American Society of Clinical Pathologists (A.S.C.P.). Persons meeting these requirements, after passing an ASCP examination, are designated as MT(ASCP) (medical technologists with ASCP certification). As in the cases of the medical laboratory assistant and the medical laboratory technician, the American Medical Technologists (A.M.T.), a smaller medical laboratory approval body, has set different training requirements for the medical technologist: either a) 90 semester hours of college or university course work plus 1 year of medical laboratory work or b) if one is already an M.L.T. (medical laboratory technician), 3 additional years of medical laboratory work experience. Persons meeting these requirements, after passing an A.M.T. examination, are designated MT(AMT) (medical technologists with A.M.T. certification). In 1975 there were no AMT-approved medical technology programs in Illinois.

The AMT-certified medical technologist may experience difficulty in being hired by some hospitals. In addition, if he/she does not have a bachelor's degree, and desires to pursue his career through promotion and/or further education, he ought to determine whether he must first have a bachelor's degree to be eligible for promotion or admission to educational programs.

* * * *

The variety of medical technology programs in Illinois is confusing; they will be discussed in three groupings:

Group A) The student wishing to become a medical technologist may take the required three years of college or university course work, which must include the above-mentioned biology, chemistry, and mathematics courses. This can be done in many Illinois colleges and universities, or by combining community college and college or university course work. During his/her third year of college, the student would apply for admission into one of the many 1-year medical technology programs in Illinois hospitals.

Nearly all of these hospitals are affiliated with certain colleges and universities. Students are not excluded from consideration for admission to hospital programs which are not affiliated with their schools, but generally, the hospitals admit qualified applicants from affiliated schools before they can consider applicants from other schools. Since hospital programs have space for only a small number of students (average is 10-14, and some accept fewer), admission may be difficult.

Students enrolled in the following colleges and universities may apply to and, if admitted, spend their fourth year of college (after which they will graduate with a bachelor's degree) in a hospital-based medical technology program:

Augustana College
Aurora College
Bradley University
College of St. Francis
DePaul University
Eastern Illinois University
Greenville College
Illinois State University
Illinois Wesleyan University
Lewis College
Millikin University
Mundelein College
Olivet-Nazarene College
North Central College
Northeastern University
Northern Illinois University
North Park College
Northwestern University
Quincy College
Rockford College
Roosevelt University
Southern Illinois University
Western Illinois University
Wheaton College

Note: Students from the University of Illinois and other colleges and universities not listed above (which will not grant academic credit for the 1-year hospital program in medical technology) must complete a bachelor's degree before they are eligible for admission to a 1-year hospital program in medical technology.

Following is a list of hospitals, arranged according to city, which provide 1-year instruction in medical technology:

Belleville

St. Elizabeth Hospital
Belleville 62221

Blue Island

St. Francis Hospital
Blue Island 60406

Champaign

Burnham City Hospital
Champaign 61820

Chicago

Augustana Hospital
Chicago 60614

Grant Hospital
Chicago 60614

Holy Cross Hospital
Chicago 60629

Illinois Masonic Medical Center
Chicago 60657

Louis A. Weiss Memorial Hospital
Chicago 60640

Mercy Hospital
Chicago 60616

Michael Reese Hospital
Chicago 60616

Rush-Presbyterian-St. Luke's Hospital
Chicago 60612

St. Anne's Hospital
Chicago 60651

St. Joseph Hospital
Chicago 60657

St. Mary of Nazareth Hospital
Chicago 60622

Veterans Administration
Research Hospital
Chicago 60611

Chicago Heights

St. James Hospital
Chicago Heights 60411

Danville

Lake View Memorial Hospital
Danville 61832

Decatur

Decatur Memorial Hospital
Decatur 62526

St. Mary's Hospital
Decatur 62525

Evanston

Evanston Hospital
Evanston 60201

Freeport

Freeport Memorial Hospital
Freeport 61032

Geneva

Community Hospital
Geneva 60134

Great Lakes

Naval Hospital
Great Lakes 60088

Harvey

Ingalls Memorial Hospital
Harvey 60426

Hinsdale

Hinsdale Sanitarium & Hospital
Hinsdale 60521

Joliet

Silver Cross Hospital
Joliet 60432

St. Joseph Hospital
Joliet 60435

Maywood

Loyola University Medical Center
Maywood 60153

Oak Lawn

Christ Community Hospital
Oak Lawn 60453

Oak Park

West Suburban Hospital
Oak Park 60302

Park Ridge

Lutheran General Hospital
Park Ridge 60068

Peoria

Methodist Hospital of Central Illinois
Peoria 61603

St. Francis Hospital
Peoria 61603

Quincy

St. Mary Hospital
Quincy 62301

Rockford

Rockford Memorial Hospital
Rockford 61101

St. Anthony Hospital
Rockford 61101

Swedish-American Hospital
Rockford 61101

Springfield

St. John's Hospital
Springfield 62702

Urbana

Carle Foundation Hospital
Urbana 61801

Waukegan

St. Therese Hospital
Waukegan 60085

Winfield

Central DuPage Hospital
Winfield 60190

* * * * * * * *

Group B) The following two upper division state universities (offering instruction for 3rd and 4th year plus graduate students) offer medical technology programs:

Governor's State University Park Forest South 60466	(this program accepts only those with 2 years of college, including a strong science background; it provides 1 year of instruction plus 1 year in an affiliated hospital)
Sangamon State University Springfield 62708	(this program accepts only those with 2 years of college, including a strong science background; it provides 1 year of instruction plus 1 year in an affiliated hospital)

* * * * * * * *

Group C) This final grouping of medical technology programs lists and describes programs which differ in varying ways from those listed earlier in this section. Each of them requires a strong college science background (requirements vary with each program, so the institutions should be contacted for details) in order to be considered for admission:

Chicago Medical School University of Health Sciences Chicago 60612	(accepts students with at least 2 years of college) 2-year program after which a bachelor's degree is awarded)
Medical Center Northwestern University Chicago 60611	(there are 2 undergraduate bachelor's degree programs -- one accepts students for the 3rd and 4th year of college instruction, the other for the 4th year only. In addition, there are two 2-year master of science degree programs in medical technology, one for persons with a bachelor's degree in medical technology and at least 2 years of medical laboratory work experience, the other for persons with a bachelor's degree in a field other than medical technology.)
College of Nursing and Allied Health Rush University Chicago 60612	(This program accepts students for the 3rd and 4th year of instruction after which a bachelor's degree is awarded)

School of Associated Medical Sciences University of Illinois at the Medical Center Chicago 60612	(accepts students with at least 2 years of college; program is 2 years in length, after which a bachelor's degree is awarded)

Employment Prospects

Since 1970 the number of medical technologists being trained in the nation has greatly increased. Until 1970 medical technologists had many job opportunities. However, in 1974, the large number of newly graduated medical technologists had created a job market in which there were very few openings in many urban areas. On the other hand there were positions in smaller cities and rural areas. In 1974 employment prospects for the coming years were hard to forecast. The U.S. Department of Labor in the Summer 1974 issue of Occupational Outlook Quarterly predicted that there would be "moderate employment expansion as a result of wide use of laboratory services by physicians."

Salary

Typical yearly salaries for inexperienced medical technologists ranged from $8,500-$10,000 in 1974. The Illinois Hospital Association reported in its December 1973 report, Hospital Salaries in Illinois that ASCP-certified medical technologists earned an average of $801 per month, while AMT-certified medical technologists received $660 per month. Experienced medical technologists with supervisory and administrative responsibilities earned salaries of $10,000-$25,000 per year, depending on the size of the medical laboratory. No information was found on the salaries of medical technologists employed in other settings.

Career Mobility

Within the hospital work setting medical technologists may, with experience and/or further education, specialize in fields such as blood banking and nuclear medicine or they may become laboratory supervisors and administrators. Medical technologists with master's degrees in education may become teachers of medical laboratory students in hospitals and colleges. Part-time work opportunities are often possible in hospital laboratories.

Increasing numbers of medical technologists are finding employment in large commercial laboratories where salaries are often higher than in hospitals laboratories. Other employers which offer opportunities for a variety of kinds of professional advancement include veterans administration hospitals, public health laboratories, the armed forces, physician-owned laboratories, and manufacturers of laboratory equipment and supplies.

A review of the several routes to becoming a medical technologist approved by the American Society of Clinical Pathologists (ASCP) and the American Medical Technologists (AMT) reveals that considerable efforts have been made in this profession to aid the upward

Career Mobility, Continued

mobility of laboratory assistants and technicians. There are equivalency examinations (the College-Level Examination Program [CLEP]) available to medical technology students who believe that they are academically competent in any of these four areas: clinical chemistry, microbiology, hematology, and blood banking. Those passing any of these tests can receive academic credit for that subject matter in many community colleges and colleges and universities. For persons with medical laboratory skills, but who lack the educational background needed to advance in the medical laboratory profession, there are proficiency tests in the same four areas mentioned above. Employers can use the results of these tests to assign work to laboratory personnel according to their abilities, including the promotion of these laboratory workers. Information about equivalency (CLEP) and proficiency tests can be obtained from the Educational Testing Service, Princeton, New Jersey 08540.

Lastly, there is a promising new proficiency exam developed by the U.S. Department of Health, Education, and Welfare, which offers medical lab assistants and technicians with a combination of 4 years of medical laboratory work and/or education (college), the opportunity to be designated as qualified to assume the supervisory responsibilities of a medical technologist (A.S.C.P.). Full details about this proficiency exam may be obtained from: Mr. Douglas Wade, Division of Health Facilities, Illinois Department of Public Health, 1130 South Sixth Street, Springfield, Illinois 62761.

Further Reading

Laboratory Medicine, a journal published by the American Society of Clinical Pathologists

Odgers, Ruth F. and Wenberg, Burness G., editors, An Introduction to Health Professions, The C.V. Mosby Company, St. Louis, 1972, pp. 109-118

Williams, M. Ruth, An Introduction to the Profession of Medical Technology, Lea and Febiger, Philadelphia, 1971

Professional Organizations Where More Information May Be Obtained

American Society of Clinical Pathologists
2100 West Harrison Street
Chicago 60612

American Society for Medical Technologists
5555 West Loop South, Suite 200
Bellaire, Texas 77401

American Medical Technologists
710 Higgins Road
Park Ridge 60068

To Broaden Your Understanding

- visit a medical laboratory and talk with the assistants, technicians, technologists, other specialists, and the pathologist
- obtain work experience in a laboratory to determine if you are suited for laboratory work
- write to professional organizations and schools

MEDICAL LABORATORY TECHNICIAN

The newest member of the medical laboratory team is the medical laboratory technician (MLT). The technician is an intermediate-level worker, generally having slightly more responsibility than the certified laboratory assistant, but considerably less than the medical technologist.

The MLT is supervised by a medical technologist, who in turn is supervised by a pathologist. The technician performs tests on urine, feces, blood, and spinal fluid to determine the presence or absence of disease. Those technicians employed in small laboratories perform in most all areas of laboratory work, but in large facilities, they tend to specialize in only one or two areas.

In the area of microbiology, the technician prepares and stains slides for bacteriological study, applies sensitivity discs to culture plates, and records results. In hematology, the laboratory technician takes blood samples from patients, does blood counts, and performs other tests. In clinical chemistry, the work involves chemical analysis of body fluids. In blood banking, the laboratory technician carries out slide and test tube procedures to identify blood groups. In the urinalysis department, the technician centrifuges urine samples, prepares the samples for microscopic study, and performs certain tests.

The medical laboratory technician is employed in hospitals and clinics, private physicians' offices, and in commercial and pharmaceutical laboratories.

Qualifications and Education

As is the case with all laboratory workers, an aptitude in the sciences, manual dexterity, reliability, and accuracy are important for success in this field. The work is scientific in nature. It involves working with delicate instruments and glassware, it involves teamwork, and perhaps most important, it demands accurate testing procedures and honest record keeping. Important diagnoses are made by the pathologist based on the results of the tests made by the MLT.

Typically, the educational requirement for becoming a medical laboratory technician is 2 years in a community college program, stressing biology, chemistry, and medical laboratory techniques. However, there are other ways of becoming an MLT; they are described on the following pages under "Educational Programs for the Medical Laboratory Technician - Illinois."

EDUCATIONAL PROGRAMS FOR THE MEDICAL LABORATORY TECHNICIAN - ILLINOIS

(Prerequisite: High school diploma or its equivalent)

Required Special Training: Either a) 2-year training program in a community college to become a medical laboratory technician or b) if one is already a certified laboratory assistant (CLA) or a graduate of a 1-year military laboratory training program, the special training would be 60 semester hours of college work, including at least 3 hours in biology and 3 hours in chemistry (beginning in August 1976 this requirement will change to 6 hours of biology and 6 hours of chemistry) or c) 2-year associate degree or equivalent, including biology and chemistry courses, plus 5 years of medical laboratory work experience.

Medical Laboratory Technician

Belleville Area College
Belleville 62221

Central YMCA Community College
Chicago 60606

College of Lake County
Grayslake 60030

Illinois Central College
East Peoria 61611

Kankakee Community College
Kankakee 60901

Lewis and Clark Community College
Godfrey 62035

Malcolm X College
Chicago 60612

Moraine Valley Community College
Palos Hills 60465

Oakton Community College
Morton Grove 60053

Olive-Harvey College
Chicago 60628

Sauk Valley College
Dixon 61021

Triton College
River Grove 60171

Educational programs for training as a medical laboratory worker which are approved by the American Medical Technologists (A.M.T.) have different requirements from those approved by the larger medical laboratory approval body, the American Society of Clinical Pathologists (A.S.C.P.). A student completing an A.M.T.-approved program is eligible for A.M.T. certification. The A.M.T.-certified medical laboratory technician may experience difficulty in being hired by some hospitals, and may find that his educational preparation will not qualify him for admission into A.S.C.P.-approved training programs. However, his educational preparation is appropriate for continuing his laboratory education in an A.M.T.-approved program.

Required Special Training for A.M.T. Certification:	Either a) at least 1 year of school and 1 year of laboratory experience, for a total of 2 years or b) 50-week Armed Forces course in medical laboratory techniques and 1 year of laboratory experience or c) 60 semester hours of college with appropriate science courses plus 6 months of medical laboratory experience.

There are no A.M.T.-approved programs in Illinois.

MEDICAL LABORATORY TECHNICIAN - Further Information

Employment Prospects

In 1974 employment prospects for medical laboratory technicians were good in Illinois, and it was believed that the employment outlook for the coming years would remain good.

Salary

Because of the relative newness of medical laboratory technician programs, in 1974, many Illinois hospitals employed few if any technicians. Therefore, it was not possible to obtain reliable salary information. Some hospitals paid their medical laboratory technicians the same wage as their medical laboratory assistants -- $2.50-$3.00 per hour. Other hospitals paid higher salaries. No information was found concerning the earnings of AMT-certified medical laboratory technicians.

Career Mobility

Technicians in the hospital laboratory may, with additional work experience, receive somewhat higher wages. With further experience and/or education, the technician may assume greater responsibility in the laboratory and receive a higher salary. With further specialized education, the technician may enter the field of cytology as a cytotechnologist.

A review of the several routes to becoming a medical technologist which are approved by the American Society of Clinical Pathologists (ASCP) and the American Medical Technologists (AMT) reveals that considerable efforts have been made in this profession to aid the upward mobility of laboratory technicians. There are equivalency examinations (the College-Level Examination Program [CLEP]) available to medical laboratory students who believe that they are academically competent in any of these four areas: clinical chemistry, microbiology, hematology, and blood banking. Those passing any of these tests can receive academic credit for that subject matter in many community colleges and colleges and universities. For persons with medical laboratory skills, but who lack the educational background needed to advance in the medical laboratory professions, there are proficiency tests in the same four areas mentioned above. Employers can use the results of these tests to assign work to laboratory personnel according to their abilities, including the promotion of these laboratory workers. Information about equivalency (CLEP) and proficiency tests can be obtained from the Educational Testing Service, Princeton, New Jersey, 08540.

Further Reading

Laboratory Medicine, a journal published by the American Society of Clinical Pathologists

Kinsinger, Robert E., editor, Health Technicians, J.G. Ferguson Publishing Company, Chicago, 1970, pp. 120-29

Williams, M. Ruth, An Introduction to the Profession of Medical Technology, Lea and Febiger, Philadelphia, 1971

Professional Organizations Where More Information May Be Obtained

American Society of Clinical Pathologists
2100 West Harrison Street
Chicago 60612

American Society for Medical Technologists
5555 West Loop South, Suite 200
Bellaire, Texas 77401

National Committee for Careers in the Medical Laboratory
9650 Rockville Pike
Bethesda, Maryland 20014

American Medical Technologists
710 Higgins Road
Park Ridge 60068

To Broaden Your Understanding

-visit a medical laboratory and talk with the assistants, technicians, technologists, other psecialists, and the pathologist

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-write to professional organizations and schools

MEDICAL LABORATORY ASSISTANT

The medical laboratory assisttant is one of many persons working together in the medical laboratory. The assistant performs many routine procedures under the supervision of a medical technologist and a pathologist (a doctor specializing in the study of diseases).

The assistant performs laboratory tests on urine, feces, blood, and spinal fluid to determine the presence or absence of disease. Those assistants employed in small laboratories have duties in most all areas of laboratory work, but in larger facilities they tend to specialize in only one or two areas.

Specific tasks performed by the assistant include collecting blood specimens, grouping and typing blood, preparing and staining slides, and examining urine and other body fluids. Besides these specific laboratory procedures, the assistant cleans and sterilizes equipment, prepares solutions, identifies specimens, and keeps accurate records of the tests performed.

Laboratory assistants are employed by hospitals, clinics, private physicians, commercial and pharmaceutical laboratories.

Qualifications and Education

As is the case with all laboratory workers, an aptitude in the sciences, manual dexterity, reliability, and accuracy are important for success in this field. The work is scientific in nature. It involves working with delicate instruments and glassware, it involves teamwork, and perhaps most important, it demands accurate procedures and honest record keeping. Important diagnoses are made by the pathologist based on the results of the tests made by the medical laboratory assistant.

The most typical manner of becoming a medical laboratory assistant is completion of a one-year hospital or community college laboratory assistant training program. Alternate methods are described on the following page, "Educational Programs for the Medical Laboratory Assistant - Illinois."

EDUCATIONAL PROGRAMS FOR THE MEDICAL LABORATORY ASSISTANT - ILLINOIS

(Prerequisite: high school diploma or its equivalent)

Required Special Training: Either a) 1-year laboratory assistant program in a hospital or community college or b) 3 years of medical laboratory work experience or c) certain basic military medical laboratory courses (12-21 weeks in length) plus 1 year of medical laboratory work experience.

The above are the requirements for training as a medical laboratory assistant which have been set forth by the American Society of Clinical Pathologists (A.S.C.P.). Persons meeting these requirements after passing an ASCP examination, are designated as CLA's (certified laboratory assistants). As in the cases of the medical laboratory technician and the medical technologist, the American Medical Technologists (A.M.T.), a smaller medical laboratory approval body, has set different training requirements for the medical laboratory assistant. A.M.T. requirements are: experience and/or post-high school education totaling 2 years. Persons meeting these requirements, after passing an AMT examination, are designated as CT's (certified technicians).

The A.M.T.-certified medical laboratory assistant (CT) may experience difficulty in being hired by some hospitals, and should he/she desire to enter an ASCP-approved program to become a medical laboratory technician, a medical technologist, or a specialist in another medical laboratory field, he may find that his educational and work preparation do not qualify him for admission. However, his educational and work preparation are appropriate for continuing his laboratory education in an A.M.T.-approved program.

Medical Laboratory Assistant

Blessing Hospital
Quincy 62301

St. Elizabeth Hospital
Danville 61832

Sherman Hospital
Elgin 60120

Swedish Covenant Hospital
Chicago 60625

Triton College
River Grove 60171

Veterans' Administration
West Side Hospital
Chicago 60612

Employment Prospects

In 1974 employment prospects for medical laboratory assistants were good in Illinois, and it was believed that the employment outlook for the coming years would remain good.

Salary

In 1974, a typical beginning wage for an ASCP-certified laboratory assistant was $2.50-$3.00 per hour. Salaries for experienced personnel were somewhat higher. No information was found indicating the earnings of AMT-certified assistants. A 1973 Illinois Hospital Association salary survey indicated that overall, ASCP-certified assistants in Illinois hospitals had average salaries of $583 per month.

Career Mobility

Assistants in the hospital laboratory may with additional work experience receive somewhat higher wages. With further experience and/or education, the assistant may become a medical laboratory technician; with considerably more education, he/she may become a medical technologist. Sometimes, an assistant obtains additional education and enters the specialized field of cytology as a cytotechnologist.

A review of the several routes to becoming a medical laboratory technician or a medical technologist which are approved by the American Society of Clinical Pathologists (ASCP) and the American Medical Technologists (AMT) reveals that considerable efforts have been made in this profession to aid the upward mobility of laboratory assistants. There are equivalency examinations (the College-Level Examination Program [CLEP]) available to medical laboratory students who believe that they are academically competent in any of these four areas: clinical chemistry, microbiology, hematology, and blood banking. Those passing any of these tests can receive academic credit for that subject matter in many community colleges and colleges and universities. For persons with medical laboratory skills, but who lack the educational background needed to advance in the medical laboratory profession, there are proficiency tests in the same four areas mentioned above. Employers can use the results of these tests to assign work to laboratory personnel according to their abilities, including the promotion of these laboratory workers. Information about equivalency (CLEP) and proficiency tests can be obtained from the Educational Testing Service, Princeton, New Jersey, 08540.

Further Reading

Laboratory Medicine, a journal published by the American Society of Clinical Pathologists

Kinsinger, Robert E., editor, Health Technicians, J.G. Ferguson Publishing Company, Chicago, 1970, pp. 120-29

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Chicago 60612

American Society for Medical Technologists
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Bellaire, Texas 77401

National Committee for Careers in the Medical Laboratory
9650 Rockville Pike
Bethesda, Maryland 20014

American Medical Technologists
710 Higgins Road
Park Ridge 60068

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-write to professional organizations and schools

HISTOLOGIC TECHNICIAN

Histologic technicians prepare samples of human tissues so that they may be studied by a pathologist to determine whether or not disease is present. A major part of her/his work is to freeze tissues from patients, then to slice thin pieces of those tissues for careful mounting on microscope slides. The slides are then examined by a pathologist.

Qualifications and Education

The histologic technician operates delicate instruments in the preparation of human tissues. Thus, she/he needs to have good vision and manual dexterity. Because of the importance of the results of the tissues examined, the histologic technician must work carefully.

Educational preparation requires a high school diploma or its equivalent plus 12 months of training in a clinical pathology laboratory course or completion of a junior or community college histologic technician program, of which at least 6 months is devoted to clinical training.

Histologic Technician

(Required: High school diploma or its equivalent plus either a) 12 months of training in a clinical pathology laboratory course or b) a junior or community college histologic technician program, of which at least 6 months is devoted to clinical training (there are no junior college or community college histologic technician programs in Illinois) or c) 3 years of work experience in histology in a medical laboratory.

Holy Cross Hospital
Chicago 60629

Memorial Hospital of Springfield
Springfield 62705

Mercy Hospital Medical Center
Chicago 60616

Methodist Hospital of Central Illinois
Peoria 61603

Mt. Sinai Hospital Medical Center of Chicago
Chicago 60608

St. Francis Hospital
Peoria 61603

St. John's Hospital
Springfield 62701

St. Joseph Hospital
Chicago 60657

University of Chicago
Hospital and Clinic
Chicago 60637

HISTOLOGIC TECHNICIAN - Further Information

Employment Prospects

In 1975, Illinois employment prospects were generally good. There were few jobs related to research projects due to decreases in federal funding of research projects, but positions were available in surgical and autopsy laboratories. Future employment prospects for well-trained histologic technicians appeared favorable.

Salary

Inexperienced histologic technicians in Chicago hospitals were paid between $575 and $850 per month in 1975. Salaries in smaller hospitals in downstate Illinois were lower. Salaries in teaching hospitals were lower than in private hospitals; however, the work in teaching hospitals provided greater breadth of experience and prestige. In many hospitals salaries for technicians did not increase significantly with added years of employment.

Career Mobility

Histologic technicians work in the histology laboratories of hospitals, research institutes, governmental institutions, and certain kinds of business such as the pharmaceutical and rubber industries. In some institutions, there is little opportunity for advancement. In other cases the beginning histologic technician may be assigned increased responsibilities and then supervisory duties, and receive considerably more pay. Those wishing to enter the related fields of cytotechnology and medical technology must return to school for further education.

Further Reading

Kinsinger, Robert E., editor, Health Technicians, J.G. Ferguson Publishing Company, Chicago, 1970, pp. 88-91.

Laboratory Medicine, a journal published by the American Society of Clinical Pathologists

Professional Organizations Where More Information May Be Obtained

American Society of Clinical Pathologists
2100 West Harrison Street
Chicago 60612

American Society for Medical Technologists
5555 West Loop South, Suite 200
Bellaire, Texas 77401

To Broaden Your Understanding

-visit a medical laboratory and talk with the assistants, technicians, technologists, pathologists, and the histologic technicians about their work

-obtain work experience in a laboratory to determine if you are suited for laboratory work

-write to professional organizations and schools

CYTOTECHNOLOGIST

The cytotechnologist is a specialist among the medical laboratory technologists. She/he is trained in special laboratory techniques and procedures for detecting body cell changes which are particularly important in the early diagnosis of cancer. Working under the direct supervision of the pathologist, cytotechnologists screen slides of cell samplings under the microscope tracing clues to disease in the patterns of cytoplasms and nuclei stained with special dyes to make them stand out brightly. One of the most common laboratory tests performed by cytotechnologists is the "Pap" smear test on women -- a test to reveal early signs of cancer of the cervix or uterus.

Cytotechnologists are found in laboratories of hospitals and cancer research centers. Some are employed in the research departments of pharmaceutical companies.

Qualifications and Education

To be suited for a career in the medical laboratory one should have an aptitude and interest in the physical and biological sciences. Since the work frequently deals with life and death matters, it requires precision, dependability and a strong sense of responsibility. Adeptness in using the hands is essential, because the cytotechnologist works with small instruments and delicate equipment. Normal vision and an ability to distinquish fine shades of color are valuable assets.

Entry into specific training in cytotechnology requires at least two years of college with preparation in the biological sciences. Those who are already medical technologists or who have bachelor's degrees in any other field also are eligible for this training. Cytotechnology educational programs are primarily in hospitals, and are 12 months in duration.

EDUCATIONAL PROGRAMS IN CYTOTECHNOLOGY - ILLINOIS

Cytotechnologist

(Prerequisite: a) two years of college in the biological sciences, or b) a bachelor's degree in any field, or c) a background as a medical technologist (which requires a bachelor's degree)

Required Special Training: 12-month hospital educational program for preparation as a cytotechnologist

Mercy Hospital Medical Center
Chicago 60616

Michael Reese Hospital and Medical Center
Chicago 60616

Millikin University
Decatur 62522
(4-year bachelor's degree program)

Mount Sinai Hospital Medical Center
Chicago 60608

University of Chicago
Lying-in Hospital
Chicago 60637

CYTOTECHNOLOGIST - Further Information

Employment Prospects

In 1975 employment prospects for cytotechnologists were generally good in Illinois with the exception of the Chicago area. Jobs were scarce in Chicago, and only somewhat more plentiful in the suburbs.

Salary

In 1975 starting salaries for inexperienced cytotechnologists were typically in the $700-$750 per month range in the Chicago area. Salaries in other parts of the state tended to be lower. The highest salaries were paid to those with considerable work experience and who had supervisory responsibilities. Those salaries were $12,000-$15,000 per year.

Career Mobility

Following successful work experience, cytotechnologists in larger hospitals may be promoted to supervisory positions in cytology. In smaller hospitals the relatively small cytology laboratory is supervised by a medical technologist. A few cytotechnologists teach in educational programs for the preparation of cytotechnologists. Those cytotechnologists with a desire for greater responsibility and higher income may increase their chances for advancement by completion of a bachelor's degree in a science area.

Further Reading

Kinsinger, Robert E., editor, Health Technicians, J.G. Ferguson Publishing Company, Chicago, 1974, pp. 36-41.

Laboratory Medicine, a journal published by the American Society of Clinical Pathologists

Professional Organizations Where More Information May Be Obtained

American Society of Clinical Pathologists
2100 West Harrison Street
Chicago 60612

American Society for Medical Technologists
5555 West Loop South, Suite 200
Bellaire, Texas 77401

American Society of Cytology
130 South 9th Street
Suite 1006
Philadelphia, Pennsylvania 19107

To Broaden Your Understanding

- visit a medical laboratory and talk with the assistants, technicians, technologists, pathologists, and cytotechnologists about their work
- obtain work experience in a laboratory to determine if you are suited for laboratory work
- write to professional organizations and schools

SPECIALIST IN BLOOD BANK TECHNOLOGY

Specialists in blood bank technology supervise the collection, processing, and storage of blood in transfusion and blood donation areas in hospitals, clinics, and special community blood bank centers. Their indepth knowledge of blood is used to assure the proper usage of blood and to solve routine as well as emergency problems involved in blood transfusion and blood donation. Proper classification of blood enables appropriate types of blood to be retrieved when needed. Specialists in blood bank technology interpret the meaning of technical information on blood to other health workers and supervise other blood bank personnel.

Qualifications and Education

Blood bank work requires that the individual exercise great responsibility. Pressure on the technologist may be constant and intense. The qualities of accuracy of work and ability to accept major responsibility are essential.

In order to qualify to become a specialist in blood bank technology, it is necessary to either be a medical technologist (which requires a bachelor's degree) or to have a bachelor's degree in one of the biological or physical sciences plus one year of work experience in a medical laboratory. The special educational program in blood bank technology is 12 months in length and is obtained at certain blood banks in hospitals, universities, and military installations. Experienced persons may be eligible to have this 12-month educational program waived.

Blood Bank Technologist

(Prerequisite: a) Be a medical technologist (which requires a bachelor's degree) or b) have a bachelor's degree in one of the physical or biological sciences plus one year of work experience in a medical laboratory.

Required Special Training: 12-month educational program in blood bank technology

Mount Sinai Hospital Medical Center Blood Center
Chicago 60608

Lutheran General Hospital Blood Bank
Park Ridge 60068

St. John's Hospital Blood Bank
Springfield 62701

SPECIALIST IN BLOOD BANK TECHNOLOGY - Further Information

Employment Prospects

Due to the absence of qualified specialists in many blood banks, it was expected that the employment outlook would remain very good during the next ten years.

Salary

In 1975 beginning specialists in blood banking earned from $14,000 to $16,000 yearly in Chicago. Experienced persons received $16,000 to $18,000. Salaries outside of Chicago were somewhat lower.

Career Mobility

With successful work experience, blood bank specialists may acquire supervisory and administrative responsibilities or may teach in an educational program for the training of specialists in blood bank technology. Most blood bank specialists enter the field from medical technology. Blood bank specialists desiring to conduct research may do clinical research in frozen blood cells, platelets, lymphocytes, and transplants; basic research in leukocytes, platelets, red cell enzymes; and industrial research consisting of the study of antibodies and the typing of sera.

Further Reading

None

Professional Organization Where More Information May Be Obtained

American Association of Blood Banks
1828 L Street, N.W.
Suite 608
Washington, D.C. 20036

To Broaden Your Understanding

- visit the blood donation and transfusion areas of a hospital or clinic and talk to a specialist in blood bank technology about his/her work
- visit a blood donation center and ask to assist in any way
- visit a medical laboratory and discuss the work done related to blood
- write to schools and the professional organization

RADIOLOGIC TECHNOLOGIST

The X-ray is widely used in modern medicine. With this powerful tool, the physician can take pictures of bones and inner organs of the body and detect abnormalities. He can also use its penetrating radiation to halt certain diseases.

In the old days, all X-ray work had to be done by the physician himself. Now that equipment has been improved and safeguarded, trained assistants can do many of the technical routines, conserving the physician's time for administering X-ray therapy and other types of radiation treatment, and for interpreting X-ray films. These assistants may be more familiar as "X-ray technicians." Radiologic technologists are in increasing demand, and for many more years the number of jobs probably will exceed qualified people to fill them.

Well-trained radiologic technologists have a wide choice of places to work. About one-third of them are employed in public or private hospitals. Others have jobs in private medical laboratories supervised and operated by physicians, in physician's offices or privately operated medical clinics, in public health laboratories, in industrial plants, and in dentists' offices or dental clinics.

The number of hours worked weekly depends to a large extent on the institution. For example, hospitals tend to ask for longer hours than do public health laboratories. If around-the-clock service is maintained, some technologists must be on call at all times, and this means that each member of the staff must take a share of weekend and night duty.

Women who'd like a job that can be combined, if necessary, with marriage and raising a family will be interested to know that radiologic technologists are often hired on a part-time basis. These part-time workers help at peak hours during the day or week, substitute for vacationing staff members, make themselves available for emergency calls, or serve small hospitals or clinics which do not have enough X-ray work to warrant a full-time job.

Because the radiologic technologist must work under the direction of a physician or dentist, he can advance in the job only by becoming skilled enough to supervise other workers who are less well trained. This means he will have to seek employment in large X-ray departments, where a number of assistants are needed.

Qualifications and Education

Becoming a medical radiologic technologist calls for a combination of aptitudes. Since the technologist deals directly with patients, he must be gentle and sympathetic. He uses a great deal of equipment, which means he must be deft with his hands and intelligent about machinery. He needs to have a flair for science in order to master necessary techniques. Most important of all, he must be accurate and careful, since errors are not only costly, but may be dangerous to the patient.

Anyone planning to enter this kind of work should be in normal good health. The possibility of danger to the technologist from continued work with radiation used to cause great concern. However, advances in equipment, techniques, and training have reduced this possibility. Today the technologist can feel secure about his health if he follows accepted practices. All good hospitals have safety procedures and insist that employees follow them.

Training programs for those wishing to become radiologic technologists are at least 2 years in length. Hospitals, colleges, and the military services conduct these programs. Course work includes physics, anatomy, physiology, as well as various aspects of radiographic theory and practice.

EDUCATIONAL PROGRAMS IN RADIOLOGIC TECHNOLOGY - ILLINOIS

(Prerequisite: high school diploma or its equivalent)

Required Special Training: 24-month (or longer) program in radiologic technology in a hospital, community college, or college (university)

Radiologic Technologist

Arlington Heights

Northwest Community Hospital
Arlington Heights 60005

Aurora

Copley Memorial Hospital
Aurora 60507

Belleville

Belleville Area College
Belleville 62221

Bloomington

Bloomington-Normal School of X-Ray Technology
Bloomington 61701

Centralia

St. Mary's Hospital
Centralia 62801

Champaign

Parkland College
Champaign 61820

Chicago

Chicago Medical School (4-year bachelor's
Chicago 60612 degree program)

Cook County Hospital
Chicago 60612

Chicago, continued

DePaul University (4-year bachelor's
Chicago 60614 degree program)

Edgewater Hospital
Chicago 60660

Englewood Hospital
Chicago 60621

Forkosh Memorial Hospital
Chicago 60618

Franklin Blvd. Community Hospital
Chicago 60624

Henrotin Hospital
Chicago 60610

Illinois Masonic Medical Center
Chicago 60657

Louis A. Weiss Memorial Hospital
Chicago 60640

Malcolm X Community College
Chicago 60612

Michael Reese Hospital and Medical Center
Chicago 60616

Mt. Sinai Hospital Medical Center
Chicago 60608

Northwestern Memorial Hospital
Chicago 60611

Chicago, continued

Provident Hospital & Training School
Chicago 60615

Ravenswood Hospital Medical Center
Chicago 60640

Roosevelt University (4-year bachelor's degree program)
Chicago 60605

Roseland Community Hospital
Chicago 60628

South Chicago Community Hospital
Chicago 60617

St. Anne's Hospital
Chicago 60651

St. Joseph Hospital
Chicago 60657

St. Mary of Nazareth Hospital Center
Chicago 60622

University of Illinois Hospital
Chicago 60612

Woodlawn Hospital
Chicago 60637

Wright Junior College
Chicago 60634

Danville

Lake View Memorial Hospital
Danville 61832

Decatur

Decatur Memorial Hospital
Decatur 62526

Millikin University (4-year bachelor's degree program)
Decatur 62526

Dixon

Sauk Valley College
Dixon 61021

East Peoria

Illinois Central College
East Peoria 61611

Elgin

St. Joseph Hospital
Elgin 60120

Evanston

St. Francis Hospital
Evanston 60202

Galesburg

Carl Sandburg College
Galesburg 61401

Glen Ellyn

College of DuPage
Glen Ellyn 60137

Grayslake

College of Lake County
Grayslake 60030

Hinsdale

Hinsdale Sanitarium & Hospital
Hinsdale 60521

Kankakee

Kankakee Community College
Kankakee 60901

Kewanee

Kewanee Public Hospital
Kewanee 61443

Macomb

McDonough District Hospital
Macomb 61455

Malta

Kishwaukee College
Malta 60150

Moline

Lutheran Hospital
Moline 61265

Moline Public Hospital
Moline 61265

Morton Grove

Oakton Community College
Morton Grove 60053

Oak Park

West Suburban Hospital Association
Oak Park 60302

Olney

Richland Memorial Hospital
Olney 62450

Palos Hills

Moraine Valley Community College
Palos Hills 60465

Peoria

St. Francis Hospital
Peoria 61603

Quincy

Blessing Hospital
Quincy 62301

St. Mary's Hospital
Quincy 62301

River Grove

Triton College
River Grove 60171

Rock Island

Rock Island Franciscan Hospital
Rock Island 61201

Rockford

Rockford Memorial Hospital
Rockford 61101

Swedish-American Hospital
Rockford 61101

South Holland

Thornton Community College
South Holland 60473

Springfield

Lincoln Land Community College
Springfield 62703

St. John's Hospital
Springfield 62701

RADIOLOGIC TECHNOLOGIST - Further Information

Employment Prospects

In 1974 there was a moderate need for radiologic technologists, nationally and in Illinois. It was expected that the same degree of need would continue over the next ten years.

Salary

In 1974, beginning radiologic technologists in the Chicago area earned about $675 monthly. In most cases, technologists in smaller cities and rural areas were paid substantially less. Experienced technicians earned considerably more than beginning ones.

Career Mobility

Radiologic technologists may assume greater responsibility and receive salary increases by entering through on-the-job training one of the following specialized areas within his/her field: administration, teaching, surgical procedures, xeroradiology, ultrasonics, or thermography. In addition, with further formal education, the radiologic technologist may become a nuclear medicine technologist or a radiation therapy technician. There are no proficiency or equivalency examinations available to persons desiring to move into nuclear medicine technology or radiation therapy technology. (Such examinations, which are available in a few other health fields, test for competence in the professional course work and/or knowledge gained through related work, and can result in shortening the required training period.)

Further Reading

Kinsinger, Robert E., editor, Health Technicians, J.G. Ferguson Publishing Company, Chicago, 1970, pp. 154-165

Odgers, Ruth F., and Wenberg, Burness G., editors, Introduction to Health Professions, The C.V. Mosby Company, St. Louis, 1972, pp. 127-134

Professional Organizations Where More Information May Be Obtained

American Society of Radiologic Technologists
645 North Michigan Avenue
Chicago, Illinois 60611

American Registry of Radiologic Technologists
2600 Wayzata Boulevard
Minneapolis, Minnesota 55455

To Broaden Your Understanding

-visit a hospital where a radiologic technologist works, and talk, and ask about his/her job

-write to schools and professional organizations

RADIATION THERAPY TECHNOLOGIST

The radiation therapy technologist is concerned with the treatment of patients with diseases such as cancer by means of radiation treatments. Under the direction of a radiologist (a physician specializing in the use of radiant energy for the diagnosis and/or treatment of disease), the radiation therapy technologist exposes specific areas of the patient's body to doses of X-ray and other forms of radiation. The intent of this treatment is to stop the spread of disease.

In addition, the technologist maintains the controlling devices and equipment used in treatment, and shares responsibility for keeping patient records.

Qualification and Education

Students considering this field must have good ability in the physical sciences and mathematics. It is essential that they learn to operate complicated equipment with precision. Finally, it is important to be warm and compassionate because many of the patients treated are seriously ill.

There are two types of training programs in radiation therapy technology. One type of program requires 24 months of special training; the other requires only 12 months, but assumes a related background. (There are no 12-month programs in Illinois.) More information on the educational qualifications and programs is listed in this section on the page entitled "Educational Program in Radiation Therapy Technology - Illinois."

EDUCATIONAL PROGRAMS IN RADIATION THERAPY TECHNOLOGY - ILLINOIS

Radiation Therapy Technologist

There are two types of programs:

1) "Two-year program"

Prerequisite: high school diploma or equivalent, including appropriate science and mathematics courses

Required Special Training: 24-month program in radiation therapy technology

No such programs exist in Illinois

2) "One-year program"

Prerequisites: Either a) be a radiologic technologist or b) be a registered nurse with an educational background in radiation physics or c) possess equivalent qualifications.

Required Special Training: 12-month program in radiation therapy technology

Rush-Presbyterian St. Luke's Medical Center
Chicago 60612

Northwestern Memorial Hospital
Wesley Pavilion
Chicago 60611

Evanston Hospital
Evanston 60202

RADIATION THERAPY TECHNOLOGIST - Further Information

Employment Prospects

In 1974 radiation therapy technologists were in great demand both nationally and in Illinois. This relatively new field is expected to have many positions available in the next ten years.

Salary

In 1974 inexperienced radiation therapy technologists in the Chicago area received salaries of approximately $800 per month. Elsewhere in the state salaries were lower. Those with teaching responsibilities had beginning salaries in the vicinity of $1,000 per month; those with administration responsibilities earned $1,200 or more. Of course, salaries for experienced personnel were considerably higher.

Career Mobility

Radiation therapy technologists may, with accumulated experience or additional education become administrators in their field. Those with an interest in teaching may teach radiation therapy to students entering the field.

Further Reading

None

Professional Organizations Where More Information May Be Obtained

American Registry of Radiologic Technologists
2600 Wayzata Boulevard
Minneapolis, Minnesota 55455

Department of Allied Medical Professions and Services
American Medical Association
535 North Dearborn Street
Chicago, Illinois 60610

Joint Review Committee on Education in Radiologic Technology
211 East Chicago Avenue
Chicago, Illinois 60611

American Society of Radiologic Technologists
645 North Michigan Avenue
Chicago, Illinois 60611

Professional Organizations, continued

Subcommittee on Radiation Therapy Technology
Commission on Technologists' Affairs
American College of Radiology
20 North Wacker Drive
Chicago, Illinois 60606

To Broaden Your Understanding

-visit a hospital where a radiation therapy technician works, talk to him/her, and ask about his/her work

-write to schools and professional organizations

Nuclear Medical Technologist

Nuclear medicine involves the application of radioactive isotopes in the diagnosis and treatment of disease. Under the supervision of a doctor, isotopes are injected into the blood stream, tissue, or organs, and then are observed by a nuclear radiation detector known as a scanner. The nuclear medicine technologist attends to the needs of the patient throughout this procedure. Great care must be taken in the use and disposal of the potentially harmful radioactive materials.

Nuclear medicine technologists are employed in hospitals, private medical laboratories, physicians' offices, clinics, public health laboratories, and industrial plants.

Qualifications and Education

An interest and aptitude in the sciences are desirable qualities for students contemplating this field. In addition, the following abilities are important: following instructions precisely; giving instructions and making explanations to patients; and perform routine, repetitive procedures accurately.

In order to become a nuclear medicine technologist, a background as a medical technologist, or as a registered nurse, or three years of college with an emphasis on science courses are necessary prerequisites to the required 12-month program in nuclear medicine technology.

EDUCATIONAL PROGRAMS IN NUCLEAR MEDICINE TECHNOLOGY - ILLINOIS

(Prerequisites: Either a) be a medical technologist, or b) be a radiologic technologist, or c) be a registered nurse, or d) have 3 years of college with an emphasis in the biological or physical sciences)

Required Special Training: 12-month program in nuclear medicine technology. Whether or not the bachelor's degree is awarded after completion of this 12-month training depends upon the program enrolled in and the student's prior education and training.

Nuclear Medicine Technologist

College of St. Francis (4-year bachelor's degree program)
Joliet 60435

Evanston Hospital
Evanston 60202

Northwestern Memorial Hospital
Chicago 60611

St. Mary of Nazareth Hospital Center
Chicago 60622

Veterans Administration Hospital
Hines 60141

NUCLEAR MEDICAL TECHNOLOGIST - Further Information

Employment Prospects

In 1974 nuclear medicine technologists were in great demand both nationally and in Illinois. This relatively new field is expected to have many positions available in the next ten years.

Salary

In 1974 inexperienced nuclear medicine technologists in the Chicago area received salaries of approximately $800 per month. Elsewhere in the state salaries were lower. Those with teaching responsibilities had beginning salaries in the vicinity of $1,000 per month; those with administrative responsibilities earned $1,200 or more. Of course, salaries for experienced personnel were considerable higher.

Career Mobility

Nuclear medicine technologists may with accumulated experience or additional education become administrators in their field. Those with an interest in teaching may teach nuclear medicine to students entering the field.

Further Reading

None

Professional Organizations Where More Information May Be Obtained

American Society of Radiologic Technologists
645 North Michigan Avenue
Chicago, Illinois 60611

Society of Nuclear Medicine Technicians
1201 Waukegan Road
Glenview, Illinois 60025

American Registry of Radiologic Technologists
2600 Wayzata Boulevard
Minneapolis, Minnesota 55455

American Society of Clinical Pathologists
2100 West Harrison Street
Chicago, Illinois 60612

To Broaden Your Understanding

- visit a hospital where a nuclear medicine technologist works and talk with him/her and ask about his/her work
- write to schools and professional organizations

(Article on the Nuclear Medical Technologist)

Interviews conducted with nuclear medicine technologists in 203 hospitals in 1969 revealed:

> "Most of the nuclear medicine technicians we talked to reported that they found their work varied and interesting, and it is probably safe to say that the average technician does not suffer from boredom. When technicians do leave their jobs, the most common reasons are marriage, pregnancy, or a better paying position elsewhere."

> "Nuclear medicine technicians were appreciative of the responsibility they were entrusted with, the newness of the field, the skill required to obtain good results, and the mutual confidence and regard between doctors and technicians, especially in the area of new information and techniques. Technicians generally were pleased with their work situation. They desired better preparatory programs and more continuing instruction, especially for those nuclear medicine technicians who are working nearly full time. Technicians were piqued where they sensed a lack of interest by their hospital or department head in the nuclear medicine unit. Other concerns were lack of space, need for another technician, a concern to show others in the hospital what nuclear medicine could do, and a desire for more equipment and better procedures."

> "The reasons people leave positions as nuclear medicine technicians is a useful guide to the problems of the job. Eighteen percent (18%) of the hospitals replied that their technicians left because the department could not offer sufficient opportunities for advancement. An additional eleven percent (11%) cited an inadequate salary schedule as the prime cause for leaving (although seventeen percent (17%) considered it an important cause). Less than five percent (5%) reported that technicians left because of lack of interest, supporting the frequently expressed idea that the nuclear medicine technician's job is in general varied and interesting.

SOURCE: ERIC 042 902 Development of Career Opportunities for Technicians in Nuclear Medical Field -- Survey of Job Characteristics, Manpower Needs and Training Resources; Interim Report No. 1, July 1969, Technical Education Research Center, Cambridge, Massachusetts, Sponsored by the Office of Education

RESPIRATORY (INHALATION) THERAPIST

The administration of oxygen for various types of illness has been a standard medical procedure for many years. As medical technology has advanced, many refinements and improvements have been made in the procedure for administering oxygen and other therapeutic gases so as to control and regulate dosage precisely and to adapt the treatment to the patient's exact medical and physical condition at the time.

The increasing precision of the process and complexity of the equipment has required that the therapy be given by a highly skilled person especially trained for this function. As a result, the health occupation of inhalation therapist has emerged in the past several years. This is now one of the most rapidly growing of all the allied health occupations.

The inhalation therapist sets up and operates various types of therapeutic gas and mist inhalation equipment, such as respirators, tents, masks, catheters, cannulas, and incubators. He administers through these devices prescribed doses of medicinal gases and aerosolized drugs to hospitalized patients.

The inhalation therapist receives from the physician a prescription specifying the type of therapy, the type of medication, and the dosage. He must then determine the most suitable method of administering the inhalant, the precautions to be observed, and the modifications that may need to be made in the method in order to comply with the physician's exact requirements.

The therapist then explains to the patient what the inhalation treatment will consist of, so as to enlist his cooperation and allay anxiety. When the equipment is brought to the bedside, the therapist instructs the patient as to breathing procedure, and then proceeds to arrange the tent or hood, or apply the face mask, or insert the cannula or catheter. Then he starts the flow of gas from the "bottle" or other source, setting the controls to regulate the flow at the required level.

As the therapy is in process, the therapist observes the patient to detect adverse reactions, notifying the nurse or doctor should these develop. He also reads the equipment gages to insure that specified pressures are being maintained.

The inhalation therapist also operates the Intermittent-Positive-Pressure-Breathing Machine (IPPB) to deliver medicinal gases and drugs in aerosolized mist concentration to the patient's respiratory system.

Some inhalation treatments run from 5 to 15 minutes. Others are considerably longer, and some are continuous. While the treatment is in process, the inhalation therapist observes the patient's comfort and general condition, noting rate of respiration, pulse, and the patient's color (pallor or flushing). He may also be required to conduct pulmonary function tests of various kinds, including lung volumes, gas flows, and blood gas analysis.

In addition to these direct therapeutic functions, the inhalation therapist is also required to perform several other related duties. He must:

- Keep the equipment clean, sterile, and in good working condition, and order repairs as needed.
- Order new equipment and see that it is properly stored.
- Maintain adequate supplies of oxygen and other gases.
- Conduct classroom and on-the-job instruction in inhalation therapy.
- Keep current with the latest developments by reading the literature, and attending meetings.

In small hospitals, there may be just one inhalation therapist; working under the direction of a physician, he will be responsible for all the duties that have been described. In larger hospitals, there may be an inhalation therapy supervisor, together with a number of inhalation therapists, trainees, and clerical help.

Qualifications and Education

Aptitudes: Verbal ability is necessary to comprehend meaning of medical prescriptions and to confer with the patient. Clerical ability is necessary to recognize pertinent details in patients' charts and to keep accurate records. Motor coordination and finger dexterity are necessary to set up equipment, manipulate controls, and to make minor repairs.

Interests: A preference for sciences, machines, and techniques is essential. So is a preference for working with people to benefit their health.

Temperament: The inhalation therapist should be able to communicate calmly with people who are under stress. He should also be extremely accurate, since this is essential in regulating medication and equipment precisely to prescription orders.

Education, training, and experience range from high school education with courses in biology and chemistry, along with more than a year's on-the-job training under strict supervision, up to and including a B.S. degree, depending upon the position desired. For the beginning high school graduate who cannot go on to college and complete a bachelor's degree, enrollment in a hospital or college or university program of inhalation therapy training or a 1- or 2-year approved curriculum is recommended. The accrediting body is the Joint Review Committee for Inhalation Therapy Training, sponsored by the American Medical Association and the American Association for Inhalation Therapy.

EDUCATIONAL PROGRAMS FOR THE RESPIRATORY THERAPIST - ILLINOIS

(Prerequisite: high school diploma or its equivalent)

Required Special Training: 2-year program in respiratory therapy leading to either a diploma or an associate degree, or in some instances, when combined with 2 or more years of college study, leading to a bachelor's degree. (There are no bachelor's degree programs in Illinois.)
[Exceptions to the above are noted below.]

Respiratory Therapist

Central YMCA Community College Chicago 60606	
Cook County Hospital Chicago 60612	(prerequisite: 2 years of college; program is 18 months in length)
Lutheran Hospital Moline 61265	(in affiliation with Black Hawk College)
Malcolm X College Chicago 60612	
Memorial Hospital Springfield 62705	(in affiliation with Lincoln Land College)
Northwestern University Medical Center Chicago 60611	(prerequisite: 2 years of college; program is 9 months in length)
Parkland College Champaign 61820	
St. Anthony Hospital Rockford 61101	(in affiliation with Rock Valley College)
Triton College River Grove 60171	

University of Chicago Hospitals and Clinics Chicago 60637	(prerequisite: 2 years of college; program is 18 months in length.) (a special 5-week diploma respiratory therapy program is offered for person with either a) a bachelor's degree with an emphasis in the sciences, b) partial fulfillment of a community college respiratory therapy program, c) a nursing background, or d) background in a related health field. (8 months of respiratory therapy work experience is necessary for eligibility)

RESPIRATORY THERAPIST - Further Information

Employment Prospects

In 1974 employment prospects for respiratory therapists were excellent in Illinois. Increasing numbers of health care facilities had recognized the desirability of employing graduates of approved respiratory therapist training programs to provide respiratory therapy services. Excellent employment opportunities were expected to continue for the next decade.

Salary

In 1974 salaries for beginning registered respiratory therapists (registration is granted to those who pass an examination after completing a training program of 2 or more years in length and 1 year of experience) averaged $4.50 per hour, and after four years increased to $5.35 per hour. Supervisors and administrators earned considerably more. Respiratory therapy department heads earned $12,000 to $20,000 depending on the size of the department. Educators of respiratory therapists and technicians had annual incomes ranging from $10,000 to $15,000.

Career Mobility

Due to the recent acknowledgement by many smaller hospitals of the need for well-trained respiratory therapists, there are attractive opportunities for therapists to assume increased responsibility in smaller health care facilities. The relative infancy of the profession and the small number of practitioners has resulted in favorable conditions for advancement to supervisory and administrative positions for those who are well-qualified.

Private companies provide respiratory care services to hospitals and individuals. Therapists working for private companies as sales representatives and practicing therapists often receive higher salaries than those employed by hospitals.

Occasionally respiratory therapists become cardipulmonary technologists. The necessary training is usually gained through on-the-job experience. There are numerous opportunities in this developing field.

Proficiency examinations in respiratory therapy have recently been designed, but in 1974 their specific use had not been determined. In the near future, the tests may be used to test for competence in the professional course work and/or knowledge gained through experience, thereby resulting in shortening the required training for becoming a respiratory therapist.

Further Reading

Respiratory Care, a journal published by the American Association for Respiratory Therapy

Kinsinger, Robert E., editor, Health Technicians, J.G. Ferguson Publishing Company, Chicago, 1970, pp. 166-174

Odgers, Ruth F., and Wenberg, Burness G., editors, Introduction to Health Professions, The C.V. Mosby Company, St. Louis, 1972, pp. 95-102

Professional Organization Where More Information May Be Obtained

American Association for Respiratory Therapy
7411 Hines Place, Suite 101
Dallas, Texas 75235

To Broaden Your Understanding

- obtain volunteer or paid work experience in a respiratory therapy department of a hospital
- talk with a respiratory therapist
- talk to a respiratory therapy patient about the importance of respiratory therapy to his/her health
- write to schools and to the professional organization

RESPIRATORY THERAPY TECHNICIAN

The respiratory therapy technician works with and assists the respiratory therapist. The technician performs many of the same functions as the therapist. However, because the technician has less extensive academic background in anatomy, physiology, pharmacology, and clinical medicine, he/she oftentimes is delegated less responsibility and is given few opportunities to exercise independent judgment. (See pages 6-D-1 and 6-D-2 in this section for a fuller description of respiratory therapy.)

EDUCATIONAL PROGRAMS FOR THE RESPIRATORY THERAPY TECHNICIAN - ILLINOIS

(Prerequisite: high school diploma or its equivalent)

Required Special Training: 1-year program in respiratory therapy in a hospital or junior college

Respiratory Therapy Technician

Belleville Area College
Belleville 62221

Moraine Valley Community College
Palos Hills 60465

Parkland College
Champaign 61820

Rock Valley College
Rockford 61101

St. Mary's Hospital
Quincy 62301

Swedish-American Hospital
Rockford 61101

University of Chicago Hospitals & Clinics (program is 1 year in length; prerequisite is 1 year of college)
Chicago 60637

Victory Memorial Hospital
Waukegan 60085

RESPIRATORY THERAPY TECHNICIAN - Further Information

Employment Prospects

In 1974 Illinois prospects for the employment of respiratory therapy technicians were excellent. Smaller hospitals which previously had used non-trained hospital personnel to administer respiratory therapy were recognizing the need to hire trained respiratory therapists and technicians. Excellent employment opportunities were expected to continue for the next ten-year period.

Salary

Salaries in central Illinois in 1974 for inexperienced registered technicians (registration is granted to those who pass a registration examination, after completing a 1-year training program and 1 year of work experience) began at about $3.25 per hour. Persons with four years of work experience earned an average of $3.75 per hour. Non-registered technicians earned less. Well-qualified persons with technician-level training sometimes held supervisory and administrative positions, more commonly in smaller hospitals. Salaries for such persons were $6.00 an hour or more.

Career Mobility

Because of the recent recognition of the need for well-trained respiratory therapy technicians and the small number of registered technicians, there are numerous opportunities for increased responsibility and salary. Technicians who demonstrate their competence may assume greater responsibility, eventually performing supervisory and administrative functions. In some cases a technician may be the department head of the respiratory therapy unit.

Sometimes technicians desire to work in the related areas of cardiopulmonary care. Entry into this field is usually achieved through on-the-job training. Prospects in this developing field are excellent.

Technicians who have completed 1-year respiratory therapy technician training programs and wish to become therapists may transfer some of their course work to 2-year therapist training programs. Arrangements for the transfer of course work credits must be made by the student.

Proficiency examinations in respiratory therapy have recently been designed, but in 1974 their specific use had not been determined. In the near future, the tests may be used to test for competence in the professional course work and/or knowledge gained through experience, thereby resulting in shortening the required training for becoming a respiratory therapy technician or respiratory therapist.

Further Reading

Respiratory Care, a journal published by the American Association for Respiratory Therapy

Kinsinger, Robert E., editor, Health Technicians, J.G. Ferguson Publishing Company, Chicago, 1970, pp. 166-174

Odgers, Ruth F., and Wenberg, Burness G., editors, Introduction to Health Professions, The C.V. Mosby Company, St. Louis, 1972, pp. 95-102

Professional Organization Where More Information May Be Obtained

American Association for Respiratory Therapy
7411 Hines Place, Suite 101
Dallas, Texas 75235

To Broaden Your Understanding

obtain volunteer or paid work experience in a respiratory therapy department of a hospital

-talk with a respiratory therapy technician and respiratory therapist

-talk to a respiratory therapy patient about the importance of respiratory therapy to his/her health

-write to schools and to the professional organization

Biomedical Engineer

The biomedical engineer[2] applies theory from the physical sciences (chemistry, physics, geology) and technology from science and industry to the solution of problems in medicine and the life sciences (physiology, biochemistry, biophysics, cytology, neurophysiology).

He has become an important partner, alongside the physician and surgeon, in every aspect of health care and preventive medicine. His contributions have revolutionized scientific and medical research and are responsible for many of the recent dramatic advances in prevention and treatment and in the repair of damage done by accident or disease.

All aspects of engineering are finding application in human biology and medicine. Many of the current efforts fall within the following areas:

- The development of new instruments for use in medical and surgical care or in research.
- The invention and perfecting of devices to repair or compensate for parts of the human body that do not function properly or that have suffered damage as a result of disease or accident.
- The adaptation of computer technology to serve a wide range of specialized requirements in the health services and in health research.
- The application of engineering theory and methods in medical and biological research—in studies, for example, of the structure of the living organism and the mechanisms through which the human body maintains itself in good running order.

Medical engineering draws on many specialties—electronics, fluid dynamics, mechanics, optics, radiation, thermodynamics, and others. Because it draws on so many resources and puts them to use for new and sometimes surprising purposes, biomedical engineers have been described as "creative borrowers." Techniques used in tracking space satellites have been put to work in monitoring systems designed to serve as electronic eyes and ears for the professional nurse in charge of a hospital patient-care unit. Plastics and methods of plastic fabrication, initially developed for the manufacture of ladies' hosiery, are now being used to splice damaged arteries and so to save human lives.

Following is a cross section of each of the major areas in biomedicine with illustrations of what is being done.

Instruments

One of the greatest needs in both medical care and research is to make measurements on organs and systems within the body "noninvasively"—without making any additional holes. X-ray technology has been developed to a high degree for this purpose, but new techniques are now being developed. One such technique uses narrow beams of sound energy in the same way oceanographers use it to locate and plot the position of underwater objects. By this means it is possible, for example, to measure an enlarged liver, to identify the presence and location of a brain tumor, or to find out whether the head of an unborn baby is too large to pass through its mother's pelvic arch. This is accomplished by means of a crystal ultrasound generating transducer connected by a flexible cable with an oscilloscope. The transducer transmits the ultrasound impulses and acts as a microphone to receive their echoes and pass them along to the oscilloscope. The echoes occur when the ultrasound impulses touch solid tissues, and tissues of different density return correspondingly different echoes. Translating the returning signals into visual images, the oscilloscope displays them on the screen where their vertical deflections enable the experienced observer to identify and take the measure of the object or organ with which he is concerned.

Another series of "noninvasive" techniques use radio energy to transmit information from a measuring device that has been swallowed, or is worn. These little transistors have been used as "radio pills" to record the fluctuations in body temperatures, pressures, *p*H and other chemical changes, the presence of internal bleeding, ovulatory activity, and digestive activity. They have also been used in research on animals, by surgical implantation to get a "closer look."

Of the many instruments devised by biomedical engineers, here is a small sampling: a tiny microphone that can be introduced via a vein into the heart to diagnose specific heart "murmurs" so that a surgeon can know more precisely what to expect; completely automatic methods for chemical and visual analysis of biological specimens for various abnormalities improving speed and accuracy of diagnosis; use of the laser as a surface and near-surface surgical tool, especially valuable for some sorts of eye surgery.

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[2] Bioengineering, medical electronics, medical engineering, bioinstrumentation, biomedical instrumentation, medical instrumentation. The preferred term is becoming bioengineering.

Replacement and Repair Devices

Some of the most interesting developments in medical engineering have to do with the production of what might perhaps be called "spare parts." Until fairly recently, such devices as did exist were limited to external parts of the body—for example, eyeglasses, dentures, hearing aids, artificial arms and legs. Now biomedical engineering has been put to work to produce new devices such as: an electronic obstacle-detector to help blind people estimate distances, avoid bumping into things, or keep from falling at street curbs or into sidewalk openings; a lifelike artificial forearm and hand powered by an electronic mechanism which is activated in turn by nerves or residual muscle (as it responds to the neural commands, the user can clench or unclench the fist, lift weights, and even write).

Much more revolutionary is the idea of using manmade devices to compensate for the faulty functioning of internal organs, or to repair damaged parts, or even to replace organs damaged beyond repair. Some devices for such purposes have already been developed, and research and experiment give promise of more to come.

Already in use are a number of devices that remain outside the body as they take over the functioning of certain organs at critical periods. One example is the heart-lung machine used to pump and oxygenate the blood during open heart surgery. Another is the electric defibrillator, used to restore the normal beat of a heart stricken by ventricular fibrillation, a potentially fatal quivering of the heart muscles. This device sends an electric current through the heart, thus stopping the quivering and inducing the heart to resume its normal beat.

Still another lifesaving machine is the artificial kidney—a mechanism which takes over the blood-cleaning job ordinarily performed by normal kidneys. One or two treatments a week can maintain people with diseased kidneys who otherwise could not possibly have lived more than a very short time. A new and improved version of the kidney machine can treat as many as 15 patients at the same time; it is simpler to operate than earlier models, and other improvements reduce the possibility of bacterial infection.

Relying on miniaturized electronic mechanisms, medical engineers look toward the continuing development of corrective devices that can be implanted under the skin, leaving the individual free to move about. The heart pacemaker is a pioneer venture in this area. Among projects now underway is the development of an implantable bladder-stimulator to be activated by radio impulses.

Meantime research continues, looking toward the development of more and better materials to patch up or even take the place of organs within the human body. As mentioned earlier, some plastics have already proved useful in some kinds of internal repair; flexible new resins may prove even more helpful as repair materials. Replacement of defective organs is a still more delicate problem, and chemists are continuing their search for materials suitable for engineering fabrication for this purpose. Such a material needs to be compatible with living tissue and must meet other exacting specifications. An artificial heart valve, for example, has to be made of a material that does not suffer mechanical fatigue under the continuing pressure of blood flow, and its chemical makeup must be such that it does not cause dangerous reactions like blood clotting, chemical poisoning, or corrosion.

Computing Machines and Electronic Data Processing (EDP)

Computers and other electronic "business machines" are helping to streamline and expedite large-scale administrative operations in hospitals, health departments, and throughout the health field. Such equipment is also being adapted for the hospital's medical records and the health department's vital statistics. New tasks, never before feasible, can now be undertaken. In such areas, for example, as epidemiology and the control of widespread diseases as well as in research, automatic data processing is yielding new and significant insights.

Even in medical care, where personal attention is paramount, electronic tools can help the physician and the nurse to make better use of their special skills. Though not in the computer branch of the electronic "family," the monitoring system borrowed from the space program is helping the professional nurse give more intensive care to more patients. Another and very specific data-processing example is the adaptation of computers for use by physicians as diagnostic aids. Though the computer cannot take over the diagnostician's job, experience indicates that it can frequently help the physician to speed up the process and pinpoint his findings.

In one demonstration, several hundred cases were examined in which the problem was to determine the cause of obscure thyroid disorders. In such a diagnosis, the task is to consider many symptoms and to determine the most probable cause in the light of the combined evidence. After the computer's "memory" had been stored with all the possible variables, its answer in nearly every case matched the diagnosis of the highly skilled specialist whose opinions served as a yardstick for measuring the computer's dependability. For the busy general practitioner and his patients, prompt access to such a store of specialized knowledge is of inestimable benefit.

Access to needed information is a critical problem not only in diagnosis (and, for that matter, not only in the health field) but throughout all the sciences. The more knowledge is available, the harder it is for the individual to keep up with what is known or to locate what might be useful in his own work. Here, in helping to capitalize on the "information explosion," automatic data processing systems can perhaps make their greatest contribution to the health field and to science generally. Information retrieval through the use of electronic mechanisms offers the medical and scientific librarian a new tool for dealing with a new and unprecedented task.

Research

In the biophysical sciences, engineering is contributing ideas as well as instruments. Its share in research ranges through almost every aspect of health-related sciences. Medical engineers are involved, for example, in the simulation of complex biological systems leading to increased understanding of living processes; in evaluating the quantitative effects of tranquilizer drugs on muscle fibers; in studying the molecular and crystal structure of the cell and its genetic significance; perhaps most dramatically, in developing new concepts for investigating the communications network of the nervous system and for gaining a new understanding of the human brain—how it learns, how it remembers, how it thinks, how it sleeps.

Career Opportunities

Biomedical engineering is slowly becoming a more and more vital part of all life science activities, from basic research to diagnosis and treatment. Biomedical engineers work in many places—hospitals, research foundations, medical, academic, industrial, and government laboratories, as well as such exotic environments as outer space and under the sea. The challenge to the biomedical engineer will sharpen as he is called upon to control the environmental hazards to life, devise ways to monitor these hazards, and even adapt our very way of life. Wherever he works, routine or repetitive tasks will be few and far between.

Diversification of career opportunities will increase for biomedical engineers, for specialists in allied fields such as electronic data processing, and particularly for various technician specialists.

Qualifications and Education

The medical general practitioner has given way to the medical specialist, but the biomedical engineer must specialize in diversity. He must be able to apply many aspects of engineering to problems in biomedicine. Approaches to problems of this nature require excellence as an engineer—the watchwords are invent and apply—and thorough familiarity with the area of application. Ability to communicate well is vital, and will make all the difference between a mediocre and a good biomedical engineer. An interest in machines, electronic devices, instruments, and the human body is important. Students wishing to prepare for engineering can begin now by getting a good foundation in high school mathematics, biology, chemistry, and physics. After high school, there will be a minimum of 4 years of college leading to a bachelor's degree in engineering.

In the past, biomedical engineers were drawn from among those trained in established engineering disciplines—electrical, mechanical, chemical, civil, and the like. This will no doubt continue for some time. But the engineering student who is looking toward this field will have a headstart if he can include some courses in biology, physiology, biochemistry, or the biophysical sciences generally. Even without this additional background, there are openings for those who are prepared to supplement their college work in engineering through on-the-job training plus some outside reading and study.

Training for biomedical engineering is in process of development at both the undergraduate and graduate level. Some universities have already set up specialized courses, and more are being planned.

Broadly based training is particularly important in a field which is expanding in so many directions. Since no one person can be expected to be equally expert in all aspects of medical engineering, increasing experience necessarily involves some specialization. But flexibility and the capacity to adapt one's skills to a variety of problems are essential. The best preparation for a satisfying combination of specialization and adaptability is sound professional training in basic disciplines.

Biomedical Engineer

Required Special Training: 4-year program in biomedical engineering, after which a bachelor's degree is awarded. A master's and/or doctoral degree is necessary for advancement in the field.

Illinois Institute of Technology Chicago 60616	(bachelor's and master's degree programs)
Northwestern University Evanston 60201	(bachelor's and master's degree programs)
University of Illinois at Circle Campus Chicago 60607	(bachelor's, master's, and doctoral degree programs)

Biomedical Engineering Technician

Required Special Training: Either a) on-the-job training, b) related work experience, or c) 2-year biomedical engineering technician training program (there are no such programs in Illinois).

BIOMEDICAL ENGINEER - Further Information

Employment Prospects

In 1975 biomedical engineers with bachelor's degrees were usually employed in industry. A greater proportion of those with master's and doctoral degrees worked in health care institutions. Employment prospects were good in 1975 and were expected to remain good in the next decade.

Salary

In 1975 starting salaries for biomedical engineers with bachelor's degrees averaged $12,000 per year. Inexperienced engineers with master's degrees averaged $16,000; those with doctoral degrees averaged $18,000. Capable, experienced persons received salaries ranging considerably higher.

Career Mobility

There are many kinds of work opportunities in the biomedical field, as can be seen from pages 8-F-1-3. The potential for challenging work is great for creative persons; the potential for the application of technology to improving health care is limitless.

Further Reading

Bronzino, Joseph D., "The Biomedical Engineer -- The Roles He Can Play," Science, 174:1001-03, December 3, 1971.

Professional Organizations Where More Information May Be Obtained

Group on Engineering in Medicine and Biology
Institute of Electrical and Electronic Engineering
United Engineering Center
25 West 45th Street
New York, New York 10036 (for information on biomedical instrumentation)

Division of Foods, Pharmaceuticals, and Bioengineering
American Institute of Chemical Engineers
United Engineering Center
25 West 45th Street
New York, New York 10036 (for information on artificial organs)

To Broaden Your Understanding

- -visit a hospital, industry, or other organization employing a biomedical engineer, and discuss the work he/she does
- -obtain paid or volunteer work in a hospital and/or engineering firm
- -write to schools and professional organizations

BIOMEDICAL ENGINEERING TECHNICIAN

The great increase in the use of automated equipment used in hospitals, industry, and research laboratories has given rise to a need for trained persons to operate and maintain this complicated equipment.

Biomedical engineering technicians who work in hospitals operate, service, and in some cases teach others how to use a variety of biomedical machines which aid the functioning of vital body organs such as the heart, lungs, and kidneys. Some of the most commonly known complex biomedical machines are those used to keep careful watch on blood pressure, the functioning of the heart, and brain waves during operations.

In industry and research, where the majority of biomedical engineering technicians are employed, job responsibilities may include assistance to biomedical engineers in the development, testing, and maintenance of new equipment.

A small, but steadily increasing number of technicians work in hospitals. Usually they work under the supervision of a biomedical engineer. In smaller hospitals the technician often must understand the workings of all the medical equipment; in larger hospitals, he/she may specialize in working with only one kind of machine.

Qualifications and Education

Those considering training as a biomedical engineering technician should have good mechanical aptitude and manual dexterity. An interest in fixing machinery will help make the work more satisfying. Educational preparation for becoming a technician varies. In some cases, on-the-job training in a hospital or biomedical equipment industry is sufficient. Some community colleges offer 2-year associate degree programs in biomedical engineering technology; however, Illinois has no such programs.

BIOMEDICAL ENGINEERING TECHNICIAN - Further Information

Employment Prospects

As of 1975 many hospitals were unaware of the existence of and usefulness of biomedical technicians. In some cases technicians were successful in finding jobs after convincing hospital administrators of the value of their services. Employment prospects were good in industries which manufactured medical equipment and provided preventive maintenance services for biomedical equipment. The outlook for employment in future years appeared favorable, given the increasing mechanization of health care services.

Salary

No information was obtained on Illinois salaries. In a nearby state, beginning salaries for biomedical technicians averaged about $10,000 a year. Those with five years of experience earned about $14,000.

Career Mobility

Biomedical technicians in many hospitals work in the maintenance department. In other cases, they form their own department--in which case there are greater chances for promotion for capable technicians to supervisory positions.

Further Reading

Kinsinger, Robert E., editor, Health Technicians, J.G. Ferguson Publishing Company, Chicago, 1974, pp. 26-35.

Medical Electronics and Data, a journal published at 2994 West Liberty Avenue, Pittsburgh, Pennsylvania

Medical Instrumentation, a journal published by the Association for Advancement of Medical Instrumentation

Professional Organizations Where More Information May Be Obtained

None

To Broaden Your Understanding

- talk to several technicians in hospitals and industry about their work
- inquire at larger hospitals to learn if they provide on-the-job training to persons wanting to become biomedical engineering technicians

ELECTROCARDIOGRAPH (EKG or ECG) TECHNICIAN

In an age when so many people suffer from heart trouble, there is a great need for the services of the electrocardiograph (EKG or ECG) technician and the machine he operates. The EKG technician operates the electrocardiograph, a machine which records the action of the patient's heart muscle. To administer the EKG exam, the technician first explains to the patient what is going to be done, then he attaches metal disks called electrodes to the patient's chest, arms, and legs. The patient feels nothing while the exam is in progress. While the machine is operating, the technician must pay special attention to the tracing on the graph paper. Should any abnormal situation occur, he must be able to recognize it and seek medical help promptly. After the exam is completed, the technician will mount the readings on cards and turn them over to the physician in charge. Usually that physician is a specialist in internal medicine or cardiology (the study of the heart).

Besides administering the examination, the technician must also be able to make minor repairs on his machine and keep it in good running order.

The EKG technician works in the hospital laboratory, clinic, emergency room, or doctor's office.

Qualifications and Education

Because he works directly with people, he should have a pleasant personality and an ability to sympathize with patients under stress. The technician should also have an aptitude for working with electrical equipment.

To become an EKG technician, one must first obtain a high school diploma or its equivalent. Most EKG training is on-the-job in an accredited hospital and may last from 3 to 6 months depending upon the type of equipment used.

ELECTROCARDIOGRAPH (EKG or ECG) TECHNICIAN - Further Information

Employment Prospects

In 1975 employment prospects for EKG technicians were good in Illinois, and were expected to remain good in the next ten years.

Salary

Starting salaries for EKG technicians were $7,000 to $8,000 yearly in Chicago. Technicians in other parts of the state usually had somewhat lower salaries. Salaries were higher for supervisory personnel and for technicians capable of administering more specialized tests for the diagnoses of heart diseases.

Career Mobility

Experienced, competent technicians may acquire the skills needed to administer specialized tests to determine the presence or absence of heart disease. Training in the use of these specialized instruments: phonocardiographs, echocardiographs, and vectocardiographs; and stress testing of the heart may be obtained in some hospitals. Technicians with longer and and even more specialized training may become cardiovascular technicians. Other possibilities for assuming more responsibility for experienced technicians are supervisory positions and teaching positions for the training of new EKG technicians.

Further Reading

None

Professional Organization Where More Information May Be Obtained

June Wilson, Recording Secretary
American Cardiology Technologist's Association
4940 La Ceiba Drive
Pensacola, Florida 32506

To Broaden Your Understanding

-obtain volunteer or paid work experience in a health care facility

-talk to an EKG technician and a physician about their work and the significance of the electrocardiograph in diagnosing heart disease

-contact hospitals to determine if they offer EKG technician training; if they do offer training, discuss the program with the instructor

-write to the professional organization

ELECTROENCEPHALOGRAPH (EEG) TECHNICIAN

Electroencephalography is a scientific field involving the recording and study of brain waves. The electroencephalographic (EEG) technician administers the EEG exam and operates the electroencephalograph, a device which records the results of the exam. Every person's brain continuously emits tiny electrical impulses; the electroencephalograph is designed to pick up these electrical impulses and detect any abnormality about them. Disturbances in one's brain waves can indicate the presence of epilepsy, stroke, or a tumor.

When an electroencephalogram has been requested by one's doctor, the patient will go to an EEG laboratory or department in a hospital. There the technician will request the patient to relax and will attach metal disks called electrodes to various parts of his head. During the exam the room is usually darkened to aid relaxation; the patient feels nothing while the machine is working. The exam may take 45 minutes or longer as it is essential that the patient be completely relaxed and a thorough test be made. Sometimes the technician will request the patient to breathe deeply or perform various mental activities. These are for the purpose of observing brain activity under a variety of situations. After the exam is completed, the technician turns the graphic results over to the physician in charge, usually a neurologist or neurosurgeon (both are involved with the study of disorders of the brain).

Qualifications and Education

An EEG technician should have a pleasant and reassuring personality. He should have an interest in people and a desire to work with and for them. Often he must deal with young children as well as confused and frightened adults who do not understand what is happening them. The technician should be mature enough to be able to comfort and reassure such patients as well as be able to explain clearly and simply what is going to happen during the exam. Manual dexterity and a good grasp of visual concepts are assets when working with the machine.

Training is usually on-the-job; however, some hospitals offer formal courses of instruction. The course is typically six months long. After completion of one year of work experience, the title of EEG "technologist" is conferred and greater responsibility may be assumed.

ELECTROENCEPHALOGRAPH (EEG) TECHNICIAN - Further Information

Employment Prospects

In 1975 employment prospects for EEG technicians were good. Graduates of hospital formal training courses in EEG technology had the best chances of finding the better jobs. In the next decade, employment prospects were expected to remain good.

Salary

Beginning salaries for EEG technicians in Illinois ranged from $6,000 to $8,000 per year. Persons with the professional designation "technologist" and with five years of work experience earned from between $8,000 to $12,000. Supervisory EEG personnel received maximum annual salaries of about $16,000. In general, salaries were somewhat higher in Chicago than in the remainder of the state.

Career Mobility

Experienced EEG technologists may assume more responsibility and receive higher pay after demonstrating their capabilities. They may also be granted supervisory and administrative duties over other EEG personnel. Finally, accomplished persons may teach in educational programs for the training of EEG technicians.

Further Reading

Kinsinger, Robert E., editor, Health Technicians, J.G. Ferguson Company, Chicago, 1974, pp. 80-87

Professional Organization Where More Information May Be Obtained

American Electroencephalographic Society
4137 Erie Street
Willoughby, Ohio 44094

To Broaden Your Understanding

-talk to and observe a certified EEG technician at work

-obtain volunteer or paid work experience in a hospital

-inquire at hospitals about EEG technician training programs

-write to the professional organization

CHIROPRACTOR

Chiropractic is a system of treatment based on the principle that a person's health is determined largely by the nervous system, and that interference with this system impairs normal functions and lowers resistance to disease. Chiropractors treat patients primarily by manual manipulation of parts of the body, especially the spinal column.

Because of the emphasis of the importance of the spine and its position, most chiropractors use X-rays extensively to aid in locating the source of the patients' difficulties. Many also use such supplementary measures as water, light, and heat therapy, and prescribe diet, exercise, and rest. Most state laws restrict the type of supplementary treatment permitted in chiropractic. Chiropractic as a system for healing does no include the use of drugs or surgery.

Employment opportunities for chiropractors are expected to be favorable through the mid-1980's. Most of the openings will be to replace those who die and retire.

Underlying the expected moderate growth in the occupation are an increase in population and the trend to include chiropractic services in health insurance coverage, including Medicare and Medicaid.

Since most states require some college training and others are likely to require it in the next few years, the outlook is best for those who have completed 2 years of college in addition to the 4 years of chiropractic college.

Opportunities for new graduates to begin their own practice are likely to be best in those parts of the country where chiropractic is generally accepted as a method of health care. Opportunities also should be good for those who wish to enter salaried positions in chiropractic clinics, chiropractic colleges, and other organizations that employ chiropractors. Earnings, as in other types of independent practice, are relatively low in the beginning, but rise after the first few years. Incomes for chiropractors vary widely: beginning chiropractors average about $10,000 a year; experienced practitioners usually earn from $14,000 to $28,000 with $24,000 annually as the average, according to limited data available.

About 16,000 persons, 6 percent of them women, practiced chiropractic in 1972. Most chiropractors are in private practice. Some are salaried assistants of established practitioners or work for chiropractic clinics and industrial firms. Others teach or conduct research at chiropractic colleges. More than two-fifths of all chiropractors are located in California, New York, Texas, Missouri, and Ohio.

Qualifications and Education

Forty-eight states and the District of Columbia regulate the practice of chiropractic and grant licenses to chiropractors who meet certain educational requirements and pass a state board examination. The type of practice permitted and the educational requirements vary considerably from one state to another. In 1972, Louisiana and Mississippi did not regulate the practice of chiropractic or issue licenses.

Most states require successful completion of a 4-year chiropractic course following high school graduation. About three-quarters of the states also require 2 years of college work in addition to chiropractic training. Nearly two-fifths of the states also require that chiropractors pass a basic science examination. Chiropractors licensed in one state may obtain a license in another state by reciprocity.

In 1972, there were 10 chiropractic colleges. Most require 2 years of college before entrance, and some require that specific courses be taken during these 2 years. Some chiropractic colleges emphasize courses in manipulation and spinal adjustments. Others offer a broader curriculum, including subjects such as physiotherapy and nutrition. In most chiropractic colleges, the first 2 years of the curriculum are devoted chiefly to classroom and laboratory work in subjects such as anatomy, physiology, and biochemistry. During the last 2 years students obtain practical experience in college clinics. The degree of Doctor of Chiropractic (D.C.) is awarded to students completing 4 years of chiropractic training.

Chiropractic requires considerable hand dexterity but not unusual strength or endurance. Persons desiring to become chiropractors should be able to work independently and handle responsibility. The ability to work with detail is important. Sympathy and understanding are among personal qualities considered desirable in dealing effectively with patients.

Most newly licensed chiropractors either set up a new practice or purchase an established one. Some start as salaried chiropractors to acquire experience and funds needed to establish their own practice. A moderate financial investment is usually necessary to open and equip an office.

General information on chiropractic as a career and a list of schools of chiropractic are available from:

American Chiropractic Association
2200 Grand Avenue
Des Moines, Iowa 50312

International Chiropractors Association
741 Brady Street
Davenport, Iowa 52808

EDUCATIONAL PROGRAMS IN CHIROPRACTIC - ILLINOIS

(Prerequisite: generally, 2 years of college work, with an emphasis in biology and chemistry)

Required Special Training: Generally, a 3 to 4 year professional program in a college of chiropractic.

Chiropractor

National College of Chiropractic 200 East Roosevelt Road Lombard 60148	(offers a 10 trimester program [3 full years + 4 months] to students with 2 years or 60 semester hours of prior college work; also offers a 2-year bachelor of science degree with a major in human biology)

Optometrist

An optometrist, doctor of optometry (O.D.), is educated and trained to examine eyes to detect vision problems. He may prescribe eyeglasses or contact lenses, as needed, or he may recommend other optical treatment to preserve or to improve eyesight. If evidence of eye disease or injury is observed, he refers the patient to an ophthalmologist for diagnosis or treatment.

After lenses are ground to the optometrist's prescription in an optical laboratory, he fits them to frames suitable to the patient and styled to the patient's features. The optometrist then adjust the eyeglasses as required to make them both comfortable and effectual.

In addition to this principal function, an optometrist may render service in any or all of the following areas:

Contact Lenses: Recent years have seen greatly increased use of contact lenses. Much of the research and development has been done by optometrists. Some optometrists now devote their entire attention to prescribing and fitting contact lens. To others it has become an ever increasing part of their general practice.

Children's Vision: Optometry is playing a leading role in discovering and solving children's vision problems, especially in the development and use of vision training and in orthoptics. Many optometrists specialize in children's vision; others serve as consultants to schools and school systems.

Aids for the Partially Sighted: Many of the effective aids for the partially sighted have been developed by optometrists. Through their research, telescopic and microscopic lens systems have been improved to benefit many in the older age group; these aids have also helped thousands of children with seriously impaired vision.

Vision Training: Vision training has long been recognized as an effective method of correcting some types of crossed eyes. It is also useful as a way to sharpen visual perception and to improve vision for reading. Some optometrists devote a large part of their time to this specialty; others include it as one of several services.

Many optometrists go into private practice.

There are many opportunities for new graduates to associate themselves with established optometrists who need assistance or are preparing for retirement. The American Optometric Association serving as a clearinghouse for associate opportunities provides a placement service for its members. Generally there are more openings than interested graduates.

There are also opportunities for optometrists in industry, in public hospitals, in numerous government agencies, and as commissioned officers in all branches of the Armed Forces. Great need exists for men and women to teach optometry or to conduct research. These careers, however, require a graduate degree.

Qualifications and Education

Students should begin early to take courses in the fundamental sciences—mathematics, chemistry, physics, biology, neurology, physiology, anatomy, and psychology. All colleges of optometry require 2 years of preoptometric college study, but today many beginning optometry students complete a 4-year college course before entering their professional training. The 11 American colleges and one Canadian college accredited by the American Optometric Association require the completion of a 4-year course of professional training for the degree of doctor of optometry.

There are many scholarships offered by State optometry associations as well as the universities and colleges. Each year, a comprehensive list of scholarships is compiled by the American Optometric Association and information on this subject may be obtained there. Financial assistance may also be obtained by educational loans under the Health Profession's Educational Assistance Act.

For further information, write to:
American Optometric Association
7000 Chippewa Street
St. Louis, Missouri 63119

EDUCATIONAL PROGRAMS IN OPTOMETRY - ILLINOIS

Optometrist

(Prerequisite: At least 2 years of college, but many students complete a bachelor's degree [4 years])

Required Special Training: 4-year professional program in a college of optometry

Illinois College of Optometry
Chicago 60616

Idealism, hero worship, the family tradition are all good reasons for considering a medical career, but unless they are balanced by realism, they may not provide a reliable and accurate picture of the doctor's life. There is indeed much glamour and drama in the physician's career, but his accomplishments are more accurately measured by his hard, patient work; his infinite attention to what may seem prosaic detail; and his willingness to undertake the unpleasant tasks that are part of his profession.

Qualifications

Not everyone is cut out to be a physician. It is fair to say that no profession requires more exacting combination of strengths—intellectual, physical, and emotional.

Anyone who is looking toward a medical career must have a first-rate capacity for thinking and learning. Being a good student is important because medical training is long and the courses are difficult —and because being a good physician means adding to your learning constantly throughout your professional life.

The candidate for medical school needs to do well in science. He'll need plenty of intellectual curiosity, initiative, judgment, and the perseverance that will carry him through years of rigorous training.

Health is important, too. As a medical student, he will need enough physical stamina to take on 5 or more years of intensive study and clinical work after college. Whether he becomes a general practitioner, pediatrician, ophthalmologist, or other medical specialist, he will, during his early years, be on call 24 hours a day.

Finally, the would-be physician should be sure he has the emotional stability that the practice of medicine demands. A good physician not only likes people and genuinely wants to serve them, but he is also prepared to express this concern in the often difficult relations and decisions. It takes a special kind of attitude to deal with the human tragedies which are a part of every practicing physician's experience throughout his professional life. Human understanding and warmth are essential for the practice of medicine, but these must be tempered by objective judgment and reason.

Preprofessional Education

Medical training takes at least 8 years after graduation from high school—and may require from 10 to 15 years for those who want to specialize. Basic education is the same for all physicians, regardless of later specialization.

The first step toward a medical education is taken in high school, with courses that prepare the student for college entrance. The school he chooses should be an accredited college or university with high academic standards.

When he reaches college, he should talk to his faculty adviser about courses. (English, physics, biology, inorganic chemistry, and organic chemistry are required.) He should begin to look into medical schools to which he may want to apply and he should also write to several to find out about special entrance requirements.

At present, approved medical schools require a minimum of 3 years of college work for entrance. A substantial number require a minimum of 4 years or a bachelor's degree. Most authorities on medical education recommend taking the full 4 years of college and a degree. Admission to medical school is competitive, and a college graduate stands a much better chance of being accepted.

Good grades are important to the premedical student. Only 5½ percent of the 1969 medical school freshmen had grade averages as low as "C" in their premedical college work. If a premedical student finds college science difficult or can't place himself in the upper half of his class, he might be well-advised to reconsider his objectives. For the same reason, every premedical student should take the aptitude test given under the sponsorship of the Association of American Medical Colleges. This test is taken a year before planned entrance into medical school. It helps determine the student's capacity for the study of medicine. Scores made on this test are used by many medical schools in screening applicants. The test is given twice a year; information about it may be obtained from The Psychological Corporation, 304 East 45th Street, New York, New York 10017.

At least 9 months to a year before he finishes his preprofessional training, the student should complete his medical school applications. He should apply to three to five schools. Most State medical schools show a decided preference for residents of their own States. A majority of American medical schools are now participating in the Central Application Service conducted by the Association of American Medical Colleges. The student submits just one application to the A.A.M.C. This organization will then forward copies to any medical schools the student designates.

Professional Education

The standard medical school course in the United States and Canada takes 4 years. However, some medical schools make it possible for the student to complete his studies in 3 years by staying in school during the summer vacations. Every medical school in the country meets the high standards set by the American Medical Association and the Association of American Medical Colleges, and has been officially approved by both of these professional organizations.

An alternate course is to take the first 2 years of medical school work in an approved school of basic medical sciences and the last two in a regular medical school. In 1969 there were 95 fully approved medical schools in the United States awarding the M.D. degree and six approved 2-year schools of basic medical sciences. Canada had 15 medical schools. Students considering medical study abroad should first get in touch with the licensing board in the State where they plan to practice, and ask for the names of foreign schools acceptable to that State.

Practically all medical students spend 1 or 2 years as interns in an approved hospital after they graduate from medical school.

A physician intending to specialize in a particular branch of medicine must have additional training as a resident physician. The trend in medical education seems to be away from the general internship (rotating through several specialties) and toward hospital training in the particular field of specialization.

Licensing

To practice, a physician must be licensed by a State board of medical examiners. Candidates must pass a licensing examination. In most States, the physician is permitted to apply for licensure immediately upon receipt of his medical degree; many States, however, require at least 1 year of internship. The majority of States will license without written examination a physician who holds a license from another State; some States limit this type of reciprocity. Three quarters of the States accept a certificate from the National Board of Medical Examiners as a basis for State licensing without further examination. To qualify for this certificate, the student must pass a three-part examination. The first part is given at the end of the second year in medical school; the second at the end of the fourth year; and the third after internship.

The medical student should obtain complete information about requirements for licensing, so he can take these into account in his plans for practice.

General Practice

So many advances have been made in the treatment of the many different diseases and disabilities that it is not possible for one person to practice with full expertise in all branches of medicine. That is why there is so much specialization.

It is wise for a student to decide, while still in medical school, whether he wants to make his career as a general practitioner or as a specialist.

Today more than half of all physicians in private practice either limit themselves to work in one specialty or else devote a considerable part of their time to a specialty. Family practice itself has become a specialty. Today's family practitioner serves as the physician of first contact with the patient, evaluates the patient's total health needs, provides personal medical care, and accepts responsibility for the patient's total health care, including the involvement of consultants when needed.

To qualify as a specialist, the physician must spend additional years in study and training for his chosen branch of medicine. Many physicians begin their specialty training right after internship. They become residents in a hospital for several years and concentrate on a chosen aspect of medicine.

Residencies in the following branches of medicine are approved by the American Medical Association's Council on Medical Education:

1. Anesthesiology
2. Colon and Rectal Surgery
3. Dermatology
4. Family Practice
5. General Practice
6. General Surgery
7. Internal Medicine
8. Neurological Surgery
9. Neurology
10. Obstetrics and Gynecology
11. Ophthalmology
12. Orthopedic Surgery
13. Otolaryngology
14. Pathology
15. Pediatrics
16. Physical Medicine and Rehabilitation
17. Plastic Surgery
18. Preventive Medicine:
    - General Preventive Medicine
    - Aerospace Medicine
    - Occupational Medicine
    - Public Health
19. Psychiatry and Neurology:
    - Child Psychiatry

20. Radiology:
    Diagnostic Radiology
    Therapeutic Radiology
21. Thoracic Surgery
22. Urology

It can be seen from this list that some of the specialties have recognized subspecialties, and the physician may concentrate his practice as much as he chooses. For example, an internist's specialty field is internal medicine, but within this specialty he may further pinpoint his practice on allergy, arthritis, heart and circulatory disease, lung disease, or some similar area. Or he may specialize in pediatrics (child health) or geriatrics (health and medical needs of older people).

For formal recognition as a specialist, a physician seeks certification from the official accrediting body for his particular specialty. These are the American boards representing recognized fields of specialization. In general, requirements for specialty certification call for 2 to 4 years of advanced hospital training, followed by 2 or more years of practice in the specialty. After meeting requirements for certification and passing examinations set by the board, the physician becomes a recognized specialist—a diplomate—in his field.

Where Physicians Practice

Most physicians are in private practice, working either independently or with one or more professional colleagues. But there are also many other kinds of opportunities, both for general practitioners and for specialists.

Public health, for example, is itself a recognized specialty—with certification from the American Board of Preventive Medicine. (See the statements on the local health department in the section on Hospital and Health Services Administration. In addition to his medical degree and his medical training as a general practitioner or a specialist, the career public health physician usually has a graduate degree in public health. Maternal and child health, the control of both communicable disease and chronic disease, environmental health, the public health aspects of mental health are just some of the opportunities in public health. Most public health physicians are in government health departments—local, State, or Federal. But some are on the staffs of voluntary health agencies.

Physicians are also becoming increasingly involved in research. For information about this area see the section on Basic Sciences in the Health Field.

In addition to the continuing and heavy demand for physicians to staff hospitals, health departments. medical schools, and research institutions, there are innumerable opportunities in school systems, in business and industry, and in other institutional positions.

For further information, write to:
American Medical Association
535 North Dearborn Street
Chicago, Illinois 60610

National Medical Association
1717 Massachusetts Avenue, N.W.
Washington, D.C. 20036

American Medical Women's
    Association, Inc.
1740 Broadway
New York, N.Y. 10019

Association of American Medical Colleges
One Dupont Circle
Washington, D.C. 20036

EDUCATIONAL PROGRAMS IN MEDICINE - ILLINOIS

(Prerequisite: A minimum of 3 years, and commonly 4 years, of college with an emphasis on the sciences)

Required Special Training: 4-years professional program in a college of medicine followed by 1 or 2 years of internship. To qualify as a specialist, additional years of study are required.

Physician

Chicago Medical School
University of Health Sciences
Chicago 60612

Pritzker School of Medicine
University of Chicago
Chicago 60637

Stritch School of Medicine
Loyola University
Maywood 60153

Medical School
Northwestern University
Chicago 60611

Rush Medical College
Chicago 60612

School of Medicine
Southern Illinois University
Springfield 62708

College of Medicine
University of Illinois
at the Medical Center
Chicago 60612

(the first year of post-graduate basic medical instruction may be taken at the Urbana-Champaign campus of the University of Illinois)

PHYSICIAN'S ASSISTANT

The Twentieth Century has seen the nation's health care facilities and health needs expand phenomenally. With this expansion has come specialization, so that in the 1970's there are a variety of kinds of health practitioners supplementing the work of the physician.

One of the most recent developments in the provision of health care is the creation of the profession of physician's assistant.

The physician's assistant has been defined by the Board on Medicine of the National Academy of the Sciences as "a skilled person qualified by academic and practical clinical training to provide services under the supervision and direction of a licensed physician." Essentially, the physician's assistant is an extension of the physician. He can increase the physician's efficiency by taking over the simpler, more routine, time-consuming tasks, freeing the doctor to devote his time and skills to the more complex matters of diagnosis and treatment. In rural and inner city areas it is anticipated that the physician's assistant will greatly extend the services of the physician by providing basic health care to people who have found it difficult to get medical attention in the past. Those with more complicated health problems would be directed to see the doctor.

The physician's assistant is not meant to replace the physician. His function is to assist his employing physician in providing health care in times of recurring shortages of physicians in many parts of the nation.

The duties of the physician's assistant are restricted to those medical areas in which he has been trained. Many work in the area of family practice, while others assist physicians whose specialties are pediatrics, surgery, physical medicine, internal medicine, dermatology, radiology, and opthalmology. All physicians' assistants are familiar with and are expected to respond to emergency situations. It is only in this area that they must act independently of the physician.

Physicians' assistants are employed by physicians in private practices, clinics, public health facilities, and hospitals. Others serve as researchers and instructors in physician's assistant training programs.

Qualifications and Education

There are approximately 85 physician's assistant programs in the nation -- and hundreds more applicants to those programs than can be admitted. These programs seek applicants with enthusiasm and a strong desire to serve in their role for many years. An aptitude for the sciences, good communicative skills, administrative ability, manual dexterity, and a pleasant personality are important to success as a physician's assistant. Some programs require 2 years of college course work prior to entrance, others will take students 18 years of age or older with a high school diploma or its equivalent. Probably of greatest importance, almost all prefer persons with previous experience in providing health care (for instance, nurses, medical corpsmen, emergency medical technicians, lab technicians, and so on).

Many educational programs for physicians' assistants are two years in length, the first year stressing academic work, the second year stressing clinical experience. A large number of programs are conducted by universities which have medical schools. (There are no physician's assistant educational programs in Illinois.)

PHYSICIAN'S ASSISTANT - Further Information

Employment Prospects

Despite the fact that a number of states have not made changes in their laws to allow physicians' assistants to work for a physician, employment prospects were excellent. Illinois has not changed its laws in this regard; nevertheless in 1974 physicians' assistants were employed by physicians. In 1974 employment prospects for the foreseeable future appeared excellent.

Salary

In 1974 salaries paid by physicians to their physicians' assistants varied appreciably, but typical beginning salaries ranged from $12,000-$15,000 annually. In at least one case a physician's assistant was paid on a monthly salary plus a commission based on the number of patients he saw.

Career Mobility

The profession of physician's assistant was deliberately developed to help the physician to provide good medical to patients. Persons who are considering this field should not view it as a stepping-stone to later becoming a physician. For the most part, physician's assistant training programs require the applicant to have had experience providing health care. Therefore, oftentimes those who gain entry into these programs are former medical corpsmen from the armed services, nurses, etc. To repeat, physicians' assistants are not likely prospects for admission to medical school for the purpose of becoming doctors. Physicians' assistants desiring to do other than patient care may find employment opportunities as instructors in physician's assistant programs.

Further Reading

American Medical Association, Health Care Functions and Responsibilities of Physician's Assistants, A Survey, no date

American Medical Association and the U.S. Department of Health, Education, and Welfare, Physicians Support Personnel, A Directory of Programs Training, 1974

Association of Physician Assistant Programs, National Physician Assistant Program Profiles 1975-76, first edition, Association of Physician Assistant Programs, 2120 L Street, N.W. Suite 210, Washington, D.C. 20037, 1974.

Professional Organizations Where More Information May Be Obtained

American Academy of Physician's Associates
Room 356
2150 Pennsylvania Avenue
Washington, D.C. 20037

American Medical Association
535 North Dearborn
Chicago, Illinois 60610

To Broaden Your Understanding

-talk to physicians about the work of the physician's assistant

-write to the professional organizations

Medical Assistant

The medical assistant is the doctor's "factotum," his "do everything." She combines in one person the role of secretary, receptionist, administrative aide, clinical aide, and countless other functions. She is the link between the physician and his patients, his professional associates, and his suppliers of equipment and medication.

Most medical assistants work in the office of physicians in private practice. Some work in group practice offices or medical clinics. The remainder are employed in larger institutions, such as hospitals and research laboratories.

Duties

It is the medical assistant's job to assist the doctor in managing his office efficiently and to perform a variety of clinical and administrative duties, freeing the doctor to concentrate on diagnosis and treatment of patients.

In a typical day a medical assistant may perform all of the following duties:

- Assist the doctor in giving some examinations.
- Receive patients.
- Answer the telephone and schedule appointments.
- Obtain medical histories from patients.
- Arrange hospital admissions.
- Greet representatives from various firms selling medical supplies.
- Assist in emergency situations.
- Reassure and comfort nervous and ailing patients.
- Order medical supplies.
- Type medical reports and fill out insurance forms.

Qualifications and Education

Important personal qualities are adaptability, kindness, physical stamina, a positive attitude, discretion, good judgment, neatness, and accuracy. Above all, the medical assistant must be sincerely devoted to helping people. She must maintain a friendly, cheerful manner that is at the same time sympathetic and courteous.

The medical assistant must be constantly alert to the fact that her attitude and manner reflect on her employer and enter into the impression that others have of him.

Students interested in a medical assisting career can begin preparing for this occupation before leaving high school. There are a number of high school courses which will prove valuable. Most important are: basic secretarial, typing, English, mathematics, and courses emphasizing health sciences.

Ideally, the high school graduate should enroll in a 2-year associate degree program offered by a community or junior college. The 2-year program has been established to give the student a broad foundation in basic medical assisting skills, including a period of practical experience in a doctor's office. The 2-year program also enables a medical assisting student to apply for certification upon graduation, provided the college she is attending has been approved by the American Medical Association in cooperation with the American Association of Medical Assistants (AAMA).

Many schools also offer 1-year courses which confer a certificate. Exploring other educational avenues may be necessary when it is not possible to enroll in a college offering a 2-year or 1-year course. Vocational and technical schools and reputable commercial institutions offer a variety of short-term courses which can be beneficial.

Some training is available through on-the-job programs sponsored by the Manpower Development and Training Act. Further information about MDTA opportunities is available from State employment service offices.

If it is necessary to go to work without receiving special training, some medical assistants will be able to find a physician who will train personnel on the job.

Continuing Education

Once the medical assistant is employed, she may enroll in the local chapter of the American Association of Medical Assistants. She will learn a great deal from fellow members and the speakers at monthly meetings. Many groups also sponsor educational seminars and chapter study courses.

After she has acquired the necessary experience, as determined by the AAMA Certifying Board, she will be eligible to apply for the certification examination. With the guidance of reference texts and a detailed study outline, she can prepare herself to take the test and become a certified medical assistant.

EDUCATIONAL PROGRAMS IN MEDICAL ASSISTING - ILLINOIS

Required Special Training: Either a) on-the-job training, or b) 1-year medical assisting program in a vocational or technical school, after which a certificate in medical assisting is awarded, or c) 2-year associate degree program in medical assisting in a community college

Medical Assistant

Belleville Area College
Belleville 62221

Bryman School
Chicago 60603

Marion Adult Education and Career Training Center, Inc.
Chicago 60612

Midstate College
Peoria 61602

Robert Morris School
Carthage 62321

Triton College
River Grove 60171

William Rainey Harper College
Palatine 60067

Employment Prospects

In 1974 there were no reliable estimates of the number of medical assistants, nationally or in Illinois. Most medical assistants work for doctors who have a private medical practice, and overall, it has been estimated that there is one medical assistant for each one to three doctors. In civilian life nearly all medical assistants are women; in the military services, most medical assistants are men. In 1974 there were more job openings in the Chicago area than elsewhere in Illinois. Opportunities were better for those who understood medical terminology and could perform simple clinical procedures than for those with only basic clerical skills. Employment prospects for well-qualified medical assistants appeared to be good for the coming decade.

Salary

In 1974, beginning salaries ranged from $5,000 to $8,000 in Illinois. New graduates of a two-year medical assistant program were reported to be earning $500 to $700 per month in Chicago; the lower salaries were received by those working for physicians in private medical practice, the high salaries by those working in hospitals. Top salaries earned were $12,000-$15,000 by experienced practitioners.

Career Mobility

There appears to be a trend toward enlarging the responsibilities of the medical assistant. In the future, medical assistants may be performing more clinical tasks than now. Graduates of medical assistant training programs which stress training in clinical as well as clerical areas offer more competencies to a prospective employer, and have greater chances of assuming larger responsibilities. For this reason graduates of nursing programs, who have a clinical background, frequently seek employment as medical assistants. There are opportunities for some medical assistants to teach their field in a vocational-technical school or community college. Many such teachers do not have education beyond their medical assisting educational program; in some cases completion of the bachelor's degree is needed for teaching. Finally, the field is attracting a number of college graduates with bachelor's degrees, who have no specific training in medical assisting.

Further Reading

The Professional Medical Assistant, a journal published by the American Association of Medical Assistants

Kinsinger, Robert E., editor, _Health Technicians_, J.G. Ferguson Publishing Company, Chicago, 1970, pp.214-221

Professional Organization Where More Information May Be Obtained:

American Association of Medical Assistants, Inc.
One East Wacker Drive, Suite 1510
Chicago 60601

To Broaden Your Understanding:

- talk to a medical assistant in a doctor's office
- talk to a doctor about the work of the medical assistant(s) working for him/her
- write to schools and the professional organization

OPTHALMIC MEDICAL ASSISTANT

Persons working under the supervision of an opthalmologist or 'eye doctor' are called opthalmic medical assistants. They perform a variety of technical procedures for the doctor. Some of these include scheduling patients and other general secretarial duties, taking case histories, administering dressings after surgery, giving eye drops and other medications, testing for color vision, giving instructions in contact lens wear and care, and sterilizing instruments for the doctor's use. Opthalmic medical assistants may be employed in opthalmogists' offices, clinics, hospitals, and eye research and teaching centers.

Qualifications and Education

The group which oversees the standards for training of opthalmic medical assistants, the Joint Commission on Allied Health Personnel in Opthalmology, has designated three different kinds of opthalmic assistants: 'opthalmic assistant,' 'opthalmic technician,' and opthalmic technologist.' To be eligible fo training for any of these kinds of positions, one must have a high school diploma or its equivalent. An interest in people and a desire to help them, an ability to do neat and precise work, cooperativeness, and good judgement are valuable assets to have when you work as an opthalmic medical assistant.

'Assistant' training is usually 1 year in length and is taken at a community college, vocational-technical school, by means of a home study course, or on the job. 'Technician' training requires 2 years of training in a community college or hospital program plus on-the-job training. 'Technologist' education which is only in the planning stage will consist of a 4-year college program in opthalmic technology and on-the-job training. The responsibilities and salaries of graduates of these three kinds of training programs vary depending on the amount of training they have received.

There are no formal educational programs for opthalmic medical assistants in Illinois. (Graduates of medical assistant educational programs (see section 7-E) frequently find employment as opthalmic medical assistants.

OPTHALMIC MEDICAL ASSISTANT - Further Information

Employment Prospects

In 1975 employment prospects for opthalmic medical assistants were very good, and were expected to remain so in future years.

Salary

In 1975 opthalmic medical assistants with the 'assistant' designation earned on the average of $7,000 to $8,000 per year in the Midwest. 'Assistants' with greater competencies were designated as 'Opthalmic Assistants A' and had higher salaries than those designated as 'Opthalmic Assistants B' (lesser competencies). In 1975 beginning opthalmic "technicians" had incomes of $8,000 to $10,000 per year. Salaries for those with ten years of experience ranged up to $15,000. Salaries for all levels of opthalmic medical assistants were higher on the east and west coasts than in the Midwest.

Career Mobility

The Joint Commission on Allied Health Personnel in Opthalmology has outlined a 'career ladder' by which the 'Assistant B' may advance to the 'Assistant A' level. Following three years of experience of the 'A' level, one may advance to the "technician" by passing an equivalency examination.

Further Reading

Joint Commission on Allied Health Personnel in Ophalmology, Careers in Medicine: Opthalmic Medical Assistants, St. Paul, Minnesota, no date

Professional Organization Where More Information May Be Obtained

Joint Commission on Allied Health Personnel in Opthalmology
1575 University Avenue
St. Paul, Minnesota 55104

To Broaden Your Understanding

- talk with opthalmic medical assistants, medical assistants, opthalmologists and other doctors about their work as it relates to your interest in opthalmic assisting

- write to the professional organization

Osteopathic Physician

There are seven colleges of osteopathic medicine accredited by the American Osteopathic Association. Their graduates receive the degree of doctor of osteopathy (D.O.).

Minimum entrance requirements for all seven colleges are 3 years of preprofessional college work in an accredited college or university. Over 90 percent of all osteopathic medical students in recent years have completed the regular 4-year college course and received a bachelor's degree before starting their professional training in osteopathic medicine.

Some liberal arts colleges make it possible for their students who have completed 3 years of preprofessional college work to receive the bachelor's degree upon successful completion of their first year's work in a college of osteopathic medicine.

Though specific entrance requirements vary among the colleges of osteopathic medicine, in general they require that the undergraduate college (preprofessional) training should include chemistry, biology, physics, and English. The colleges urge prospective students to begin these subjects while they are still in high school.

Qualifications and Education

Some of the personal qualifications the American Osteopathic Association lists as necessary for success in the field of osteopathic medicine are the desire to serve as an osteopathic physician, friendliness and patience, and the ability to meet and inspire confidence in people. Other characteristics which the association considers desirable include self-confidence, emotional stability, enthusiasm, and perseverance.

All seven colleges of osteopathic medicine are accredited by the American Osteopathic Association. During the first half, basic science subjects are taken, such as anatomy, physiology, pathology, bacteriology, immunology, biochemistry, histology, embryology, pharmacology, and public health. In addition, there is training in osteopathic principles, diagnosis, and practice, including manipulative therapy and other techniques. During the last half, the curriculum includes clinical subjects and practical training in the osteopathic hospitals and outpatient clinics with which the college is affiliated.

After receiving the degree of doctor of osteopathy, most of the graduates serve a rotating internship of 12 months before entering private practice. For this training, they go to one of the 80 teaching osteopathic hospitals which has been approved by the American Osteopathic Association for intern training.

The basic course in osteopathic medicine is designed to train its graduates to be general practitioners. There are opportunities, however, for specialization.

Twelve specialty certifying boards are affiliated with the American Osteopathic Association. These are the American Osteopathic Boards of: Anesthesiology; Internal Medicine; Dermatology; Neurology and Psychiatry; Obstetrics and Gynecology; Ophthalmology and Otorhinolaryngology; Pathology; Pediatrics; Proctology; Radiology; Rehabilitation Medicine; and Surgery.

Licensure

A State license is necessary to practice osteopathic medicine. All States grant such licenses to graduates who fulfill the educational qualifications and pass the required examinations. Licensing agencies in 49 States and the District of Columbia issue unlimited licenses to eligible doctors of osteopathic medicine. Some limitations remain upon their right to use drugs and operative surgery in one State.

State requirements for licensing differ considerably. Specific information can be secured from the licensing board of the State where the student is planning to practice.

Opportunities

Most members of the osteopathic medical profession are in private practice. This involves many of the same considerations as private practice in other fields. The potential advantages of working independently and of increasing one's income with years and experience should be weighed against disadvantages such as long and unpredictable hours.

Although licenses are available to doctors of osteopathy in all States, a 1969 survey indicates that approximately half of the 14,000 osteopathic physicians practicing in the United States were located in Florida, Michigan, Missouri, Ohio, Pennsylvania, Texas, and New Jersey.

According to the American Osteopathic Association, 310 osteopathic hospitals are located in the United States. The majority of practicing doctors of osteopathy utilize these hospitals. In addition, D.O.'s are eligible for admittance to the medical and surgical staff of many tax-supported hospitals throughout the country.

For further information, write to:
American Osteopathic Association
212 East Ohio Street
Chicago, Illinois 60611

EDUCATIONAL PROGRAMS IN OSTEOPATHIC MEDICINE - ILLINOIS

(Prerequisite: A bachelor's degree (in some cases only 3 years of college) with a strong background in chemistry, biology, and physics)

Required Special Training: 4 years in a college of osteopathic medicine followed by a 12-month internship in an osteopathic hospital

Osteopathic Physician

Chicago College of Osteopathic Medicine
Chicago 60615

Podiatrist

The podiatrist is a professionally trained footcare practitioner whose services supplement the medical care provided by the physician. Within his own field, the podiatrist is an active member of the health team. Since 3 out of 4 people have foot troubles, a very important need in health services is being filled by podiatry.

The podiatrist diagnoses and treats diseases and deformities of the feet or tries to prevent their occurrence. The problems he deals with range from a simple corn to foot difficulties requiring special shoes or foot appliances. He consults with other medical specialists concerning further medical treatment.

Podiatrists must be alert to a patient's general health, too. Sometimes a disease like diabetes or hardening of the arteries will produce symptoms in the feet or legs. If the patient is not already under the care of a physician, the podiatrist will urge him to get medical treatment promptly. In turn, people with diseases that affect the feet may be sent by their physicians to a podiatrist for auxiliary care.

The podiatry field is far from overcrowded. Twenty-two million patients were served by podiatrists in 1970. The expanding population with its greater number of older people has resulted in an increasing demand for podiatrists. The podiatrist's practice ranges from office treatment and surgery to consultation with specialists in every area of health. Most podiatrists are self-employed, working in their own offices or in professional buildings with other specialists. Many others serve on the staff of hospitals and treatment centers, in government health programs, and the Armed Forces. Some teach in colleges of podiatry and some do research work.

Although most podiatrists give general foot care to a general clientele, some become particularly interested in specialized work. This might be with children, older people, or industrial workers, or with the treatment of foot deformities. Some podiatrists may prefer to teach, either full or part time, or do research on foot ailments. Men and women with top qualifications sometimes act as consultants for various private and government health agencies, and for hospitals.

Qualifications and Education

The podiatrist must have deft hands, steady nerves, and good vision. A knack for mechanical work is helpful, since the podiatrist uses quite a bit of electrical equipment and must be able to make or adjust such devices as casts, braces, and splints.

To become a podiatrist, a student must complete a 4-year course at a college of podiatry. Anyone planning to enter a college of podiatry must be a high school graduate and must have completed at least 2 years of college work.

One-year and 2-year residencies are available to students who want further experience or who must have extra practical training to meet licensing requirements in certain States.

For further information, write to:
American Podiatry Association
20 Chevy Chase Circle
Washington, D.C. 20034

EDUCATIONAL PROGRAMS IN PODIATRY - ILLINOIS

(Prerequisite: At least 2 years of college with an emphasis on the sciences)

Required Special Training: 4-year professional program in a college of podiatry

Podiatrist

Illinois College of Podiatric Medicine
Chicago 60610

Veterinarian

Looking after the health of farm animals and pets is an occupation almost as old as civilization itself. People living in close association with animals soon realized that they were--like human beings--subject to many ills, which could make them unfit for use as food or unable to work or provide companionship. And, by practical experience, people also learned that animals could transmit many diseases to their owners. In fact, in older civilizations, the same "medicine man" treated both animals and human beings. It was not until many centuries later that veterinary medicine became a separate specialty of the medical sciences.

Nowadays, the veterinarian has the basic responsibility for keeping animals healthy and taking care of them when they're sick or injured. He has also become a key figure in disease prevention among human beings. This is one of the newest developments in the health field, and helps explain why veterinary medicine today is a career with wide opportunities for service.

Work done by the veterinarian usually falls into one of three main categories. He tries to keep animals free from disease by vaccinating them and teaching their owners how to feed and care for them properly. He gives medical or surgical care to sick or injured animals. Finally, he works to protect and promote human health. His observations, research, and treatments have been applied in bettering man's health--in fields of surgery, internal medicine, cancer, tuberculosis, and chronic diseases. He plays an important part, also, in protecting human beings from the various diseases that can spread from animals to man.

It is not hard to see why the veterinarian's work is so important to farmers and pet owners, and to the managers of zoos, circuses, riding stables, and other establishments where animals are grouped together. Sickness among cows for example, will ruin a dairy farmer financially unless it can be stamped out before the whole herd is affected. But veterinary medicine is just as important--in a less obvious way--to people who live in cities and don't own animals. When they buy milk, meat, poultry, and eggs, they are benefiting from the veterinarian's services--from his efforts to keep food-producing animals in good health, and from his inspections of animal-origin foods.

People in all kinds of communities also benefit from the veterinarian's efforts to stamp out or control those animal diseases which spread to human beings. Twenty of these diseases are a possible threat in this country, with rabies, brucellosis, and a form of food poisoning called salmonellosis heading the list. Keeping these in check is a responsibility shouldered by the veterinarian in cooperation with the specially trained physician or other health official.

A majority of veterinarians--an estimated 60 percent--go into private practice. Most of them handle all kinds of domestic animals. Rural veterinarians may practice largely with cows, horses, swine, or poultry. Veterinarians living in cities or large towns usually treat only household pets, but may care for farm animals as well. A small number of veterinarians specialize in zoo and circus animals, or in animals that are raised commercially for their fur.

Rural veterinarians who develop large practices sometimes build clinics or hospitals, where animals can be brought for treatment and surgery, but many practice from offices and travel to their patients. They make use of many modern methods of communication and transportation. It is not at all unusual for the rural veterinarian to keep in touch with his office by radio-telephone, or to fly his own plane.

In addition to the work he does with his animal patients, the rural veterinarian also has the responsibility of teaching farmers and their families about diseases which farm animals can transmit to people, and of showing them how to protect themselves.

The veterinarian who is interested in a public health career needs special training in addition to this education in veterinary medicine. It is recommended that he get a year or two of practical experience, and then enroll for a program of postgraduate study in an accredited school of public health. Specialized courses will help him to understand how comprehensive health programs are developed, and to see how veterinary medicine can contribute to such programs. This postgraduate work leads to a master's degree—usually master of public health.

The veterinarian fits with special ease into the public health field, because he has been trained to consider diseases as they affect animals in groups. Prevention rather than treatment is stressed—and prevention is the keystone of public health.

More than 11 percent of all veterinarians work directly in the public health field—for the Federal Government, State, or local agencies, and international groups.

Qualifications and Education

To be successful, the veterinarian needs a combination of natural gifts and technical training. He/she must be fond of animals and feel no fear when working with them. He/she needs to be an alert observer--one's patients cannot answer questions or describe symptoms. Steadiness and calmness are also important, since both animals and their owners react unfavorably to impatience, or rough or abrupt motions.

Anyone planning to become a veterinarian should count on a minimum of 6 years of schooling after graduation from high school. One must have at least 2 years of preprofessional study at a liberal arts or agricultural college. One then enters an approved college or veterinary medicine, which gives a 4-year course leading to the degree of doctor of veterinary medicine (D.V.M.).

Although only 2 years of college are required, it is best to have a full 4 years of college work, with a bachelor's degree. The extra years give the student a broader cultural background--and mean that he has more to offer his profession and the community which he will serve. Also, competition is keen for entry to schools of veterinary medicine; other things being equal, the college graduate has a better chance of acceptance.

EDUCATIONAL PROGRAMS IN VETERINARY SCIENCE - ILLINOIS

Veterinarian

Required Special Training: At least 2 years of college (many students have 4 years) in a preprofessional curriculum offering appropriate courses. Following this is a 4-year professional program in veterinary science.

University of Illinois
Urbana 61801

Veterinary Technician

(Prerequisite: high school diploma or its equivalent)

Required Special Training: 2-year community college program in veterinary technology

Parkland College
Champaign 61820

VETERINARY TECHNICIAN

The veterinary technician (also called the veterinary assistant, animal technician, or laboratory animal technician/technologist) works under the supervision of a veterinarian to assist him in the treatment and care of the animals with which he is working. In assisting and caring for experimental animals, the veterinary technician may work under an animal scientist, in which case he/she would be more likely to use the title "animal technician" or "laboratory animal technician." The animals involved may be pets, farm stock, zoo specimens, or laboratory animals. Some of the duties of the technician include obtaining and recording information about the cases, collecting specimens and performing certain laboratory procedures, preparing equipment and animals for surgery, assisting in surgery, applying dressings to wounds, and caring for and feeding the animals staying at the clinic or laboratory where the technician is employed. As the need for veterinarians and animal scientists and their research continues to grow, there will likewise be an increasing need to delegate such technical tasks as those mentioned above to non-professional personnel like the veterinary technician.

Because the veterinary technician must work directly under the supervision of a veterinarian or animal scientist, he/she is employed in the same settings as these professionals. Private veterinary practices, biological laboratories, zoos, meat packing companies, and government agencies such as the U.S. Department of Agriculture are the most common sources of employment.

Qualifications and Education

A person considering a career as a veterinary or animal technician should have a liking for animals and a concern for their welfare. He/she should have the ability to handle them carefully and be able to work with and around them without fear. In addition, an interest in the biological sciences is helpful.

Training is usually 2 years in length following high school graduation and is designed to provide the student with a general background in biology, chemistry, mathematics, and communications, with some economics and business management. Some colleges and universities offer a 4-year baccalaureate degree in animal technology or animal science.

VETERINARY TECHNICIAN - Further Information

Employment Prospects

In 1975 employment prospects for veterinary technicians were good in Chicago and generally fair in the remainder of the state. Similar employment prospects were expected to continue in the next ten years.

Salary

Inexperienced veterinary technicians earned from $5500 to $6500 annually in 1975. Those with some experience received $7000 to $8000 per year. Teachers of veterinary technicians were paid $8500 to $10,000.

Career Mobility

Opportunities for advancement for veterinary technicians are quite limited. Experienced, capable technicians may teach in or administer educational programs for the training of veterinary technicians. Technicians desiring to become veterinarians must complete an educational program of the kind mentioned under "Veterinarian" at the top of the page 7-I-3. Competition for acceptance into veterinarian educational programs is very intense.

Further Reading

Catcott, E.J. and Smithcors, J.F. editors, Animal Hospital Technology, American Veterinary Publications, Inc., Wheaton, Illinois, 1971

Professional Organization Where More Information May Be Obtained

American Veterinary Medical Association
600 South Michigan Avenue
Chicago, Illinois 60605

(In 1975 an Illinois organization for veterinary technicians was in the process of formation; for further information contact Director, Curriculum in Veterinary Technology, Parkland College, Champaign, Illinois, 61820)

To Broaden Your Understanding

- ask a veterinarian to let you assist him, preferably on at least ten different occasions so that you can get a balanced view of the kind of work involved
- talk with veterinarians and, if possible, a veterinary technician
- write to the school

Professional Nurse

In hospital nursing, positions for professional nurses range from general duty nurse (the usual beginning job) to director of the nursing service, with the in-between positions of head nurse and supervisor, each with its assistants and associates. A nurse's education, experience, and ability will determine the extent to which she advances.

Public health nursing is concerned not only with the care of the sick but also with the prevention of illness. The public health staff nurse (the beginning position in this field) goes into homes, schools, clinics, and industries. Positions in public health nursing range from this beginning position through supervisor to director of the service, each with its assistants and associates. Each of these has its special educational and experience requirements.

Occupational health (industrial) nurses work with employees of business firms, industries, and other establishments, and are responsible for the health of the workers on the job—and often off the job too. These nurses are concerned with the first-aid treatment for injuries and minor illnesses, and with helping to promote safe and healthful working conditions. Occupational health nursing, like school nursing, is often considered a part of public health nursing.

Nurses also hold teaching positions at schools of professional nursing, schools of practical nursing, and college and university programs offering advanced preparation in nursing and related fields.

In private duty nursing, the nurse contracts independently to give bedside care to patients in the home or hospital. She is engaged at the request of the physician or the family.

There are additional opportunities for nurses in U.S. Government service at home and abroad. These will be found in the military nurse corps of the Army, Navy, and Air Force; Veterans' Administration hospitals; Agency for International Development; and Peace Corps. Home and foreign mission services, national and international organizations (American Red Cross and World Health Organization, for example) provide many interesting positions for nurses. Physicians' and dentists' offices, camps, magazines and publishing houses, and professional organizations are other places where nurses work.

Nursing also has its clinical specialties. For example:

- Pediatric nurses specialize in caring for children.
- Obstetric nurses care for mothers and new babies.
- Psychiatric and mental health nurses care for mentally ill.
- Rehabilitation nurses care for patients with chronic and disabling conditions.
- Medical-surgical nurses care for patients before, during, and after surgery, and in most types of illness.

Other nursing specialties include the care of patients with particular diseases, such as cardiovascular illnesses, cancer, and pulmonary ailments.

Positions in advanced fields of nursing are open to nurses that have experience and have taken additional courses of study beyond the basic preparation, usually at the master's or doctoral level.

The new graduate of a basic nursing program most likely will begin his or her nursing career in a hospital as a general duty nurse—or in a public health agency as a staff nurse, provided she or he has completed a baccalaureate program approved for public health nursing. With more experience and further education, the nurse will then work up to the higher positions, as in any other profession.

Most professional nurses work a 40-hour week, although they cannot always expect a conventional 9-to-5 day. Nursing services go on 24 hours a day; nurses expect to take their turn at evening and night duty.

Professional nurses can choose their preferred area of specialization. Many nurses enjoy the routine of hospital work with its opportunity for direct patient care, participation in research, and in teaching. Others prefer the freedom of activity in public health nursing—working with patients and their families through the health department, the school system, the visiting nurse association, or other community agencies. The occupational health nurse works in a factory or office which may employ large numbers of workers. Working in a physician's office or in private day nursing appeals to those who like a more independent setting.

Qualifications and Education

Intelligence, common sense, integrity, a sense of responsibility, a considerable degree of self-discipline, tact, and humor—all of these are important. A healthy outlook on life, both in its dark moments and on the lighter side, and good physical health are essentials. (The applicant will be required to pass a physical examination before being accepted by a school of nursing.)

A nurse must like people well enough to put up with them when they are irritable and when caring for them may be difficult. She must like people well enough to take care of all kinds of people, of all ages, and in all stages of illness or injury. Finally, the nurse must like people well enough to work smoothly with other members of the health team—physicians, nurses, and other professional personnel, and auxiliary workers.

Students who cannot foresee giving themselves to nursing with sincerity and purpose, but who hope only for a glamorous well-paying job, should consider some other profession. Preparation for nursing is hard work, but most nurses agree that the ideals and satisfactions of the profession are worth it.

An applicant to a nursing program must be 17 or 18 years of age. The maximum age limit depends on the individual applicant and the school. Most schools admit men students as well as women. Opportunities for men in nursing are excellent.

All schools of professional nursing require at least high school graduation for admission, and a few require college work. In addition, most require the completion of certain high school subjects.

Professional nursing schools fall into three general categories: junior or community college schools offering a 2-year associate degree program; hospital schools of nursing offering a 2½- to 3-year diploma program; and colleges offering a 4-year baccalaureate program. All three types require graduation from high school, various pre-entrance examinations, plus a physical examination. Their programs cover the nursing arts and sciences which form an essential background for nursing practice.

The associate degree program (2 years) will include general education courses, especially science, at the junior college level, in addition to nursing theory and practice. The diploma course (2½- to 3-years) may also involve general education subjects, including biological, physical and social sciences, and nursing theory and practice.

Graduates of either of these courses are fully prepared for bedside nursing in a hospital, nursing home, or private duty, but they are not prepared for supervisory or administrative positions in nursing. Some students who complete a 2-year or 3-year program may wish to go on to the 4-year college program. This they can do, but should not count on getting transfer credit for the full 2 or 3 years of education they have had. Colleges may grant credit for some of the courses, or they may provide credit on the basis of examinations provided by the college.

The 4-year baccalaureate program ("baccalaureate" and "bachelor's" are interchangeable terms) includes work in the arts, humanities, and sciences. The major is in nursing, including theory and practice. Graduates are prepared for general duty staff nursing, for beginning positions in public health agencies, for advancement to supervisory and administrative work in nursing, and for graduate study leading to a master's or doctor's degree.

A graduate degree, which would involve 1 to 5 years of study beyond the baccalaureate, is ordinarily required for advanced clinical practice, teaching, research, and other advanced positions.

All nursing schools preparing professional nurses today are State approved. This means their graduates are eligible to take State licensing examinations. Those passing the State licensing examination are permitted to practice in the State and to identify themselves as registered nurses, using the initials R.N. after their names.

EDUCATIONAL PROGRAMS IN PROFESSIONAL NURSING - ILLINOIS
(Undergraduate)

(Prerequisite: high school diploma or its equivalent)

Required Special Training: the professional nurse is defined here as a graduate (having passed the examination which confers the designation, R.N.) of one of these three kinds of programs:

2-year associate degree program offered in community colleges;

3-year diploma program offered in hospitals;

4-year (sometimes somewhat longer) bachelor's degree program offered in colleges and universities.

A) Associate Degree Programs in Nursing

Belleville Area College
Belleville 62221

Black Hawk College
Moline 61265

College of DuPage
Glen Ellyn 60137

Elgin Community College
Elgin 60120

William Rainey Harper College
Palatine 60067

Illinois Central College
East Peoria 61611

Illinois Valley College
Oglesby 61348

Joliet Junior College
Joliet 60436

Kankakee Community College
Kankakee 60901

Kaskaskia College
Centralia 62801

Kennedy-King College
Chicago 60621

Lake County College
Grayslake 60030

Lewis & Clark Community College
Godfrey 62035

Lincoln Land Community College
Springfield 62703

John A. Logan
Carterville 62918

Malcolm X College
Chicago 60612

Mayfair College
Chicago 60630

Associate Degree Programs in Nursing, Continued

McHenry Community College*
Crystal Lake 60014

Moraine Valley Community College
Palos Hills 60465

Morton College
Cicero 60650

Olive-Harvey
Chicago 60628

Olney Central College
Olney 62450

Parkland College
Champaign 61820

Prairie State College
Chicago Heights 60411

Rend Lake College
Ina 62846

Rock Valley College
Rockford 61101

Carl Sandberg College
Galesburg 61401

Sauk Valley College
Dixon 61021

Shawnee Junior College
Ullin 62992

Southeastern Illinois College
Harrisburg 62946

Southern Illinois Collegiate Common
Common Market
Carbondale 62901**

Southwest Community College
Chicago 60652

State Community College
East St. Louis 62201

Thornton Community College
South Holland 60473

Triton College
River Grove 60171

Waubonsee Community College
Sugar Grove 60554

Wilbur Wright College
Chicago 60634

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* The McHenry College Associate Degree Nursing Program is conducted in cooperation with the Elgin Community College Nursing Program.

** The Colleges in the Southern Illinois Collegiate Common Market include Rend Lake, John A. Logan, Shawnee, Southeastern Community, and Southern Illinois University.

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B) Diploma Programs in Nursing

Augustana Hospital
Chicago 60614

Blessing Hospital
Quincy 62301

Cook County Hospital
Chicago 60612

Copley Memorial Hospital
Aurora 60507

Decatur Memorial Hospital
Decatur 62526

Evangelical School of Nursing
Oak Lawn 60453

Evanston Hospital Nursing School
Evanston 60201

Freeport Memorial Hospital
Freeport 61032

Graham Hospital
Canton 61520

Illinois Masonic Hospital
Chicago 60657

Lake View Memorial Hospital
Danville 61832

Lutheran General & Deaconess Hospitals
Park Ridge 60068

Lutheran Hospital
Moline 61265

Memorial Hospital
Springfield 62701

Mennonite Hospital
Bloomington 61701

Methodist Hospital
Peoria 61603

Michael Reese Hospital
Chicago 60616

Moline Public Hospital
Moline 61265

Mount Sinai Hospital
Chicago 60608

Passavant Memorial Hospital
Jacksonville 62650

Ravenswood Hospital
Chicago 60640

Rockford Memorial Hospital
Rockford 61103

Rock Island Franciscan Hospital
Rock Island 61201

St. Anne's Hospital
Chicago 60651

St. Anthony Hospital
Rockford 61101

St. Bernard's Hospital
Chicago 60621

St. Francis Hospital
Evanston 60202

St. Francis Hospital
Peoria 61603

St. John's Hospital
Springfield 62701

B) Diploma Programs in Nursing, Continued

St. Joseph Hospital
Joliet 60435

St. Mary of Nazareth
Chicago 60622

South Chicago Community Hospital
Chicago 60617

Swedish American Hospital
Rockford 61101

Northwestern Memorial Hospital - Wesley - Passavant School of Nursing
Chicago 60612

West Suburban Hospital
Oak Park 60302

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C) Bachelor's Degree Programs in Nursing

(Unless indicated otherwise, the following bachelor's degree nursing programs admit both 1) students who have had no professional nursing education and 2) students who have completed an associate degree program in nursing in a community college or a hospital diploma nursing program) NOTE: In order to be eligible for many graduate level (master's and doctoral degrees) nursing programs, the student must have completed an undergraduate program (bachelor's degree) which is approved by the National League for Nursing.

Bradley University
Peoria 61606

Chicago State University
Chicago 60628

DePaul University
Chicago 60616

Elmhurst College
Elmhurst 60126

Governor's State University
Park Forest South 60466

(three programs stressing these areas: practice, teaching, and administration. Prerequisite: registration as a nurse [R.N.] in Illinois, and completion of either an associate degree program in professional nursing or a hospital diploma program in professional nursing)

Illinois Wesleyan University
Bloomington 61701

(program is only for students with no prior nursing education)

C) Bachelor's Degree Programs in Nursing, continued

Lewis College
Lockport 60441

Loyola University
Chicago 60626

North Park College
Chicago 60625

Northern Illinois University
DeKalb 60115

Olivet-Nazarene College
Kankakee 60901

Rush College of Nursing and Allied Health Sciences
Chicago 60612

St. Xavier College
Chicago 60655

Sangamon State University
Springfield 62703

(program is only for students who are registered nurses [R.N.] in Illinois, and who have completed either an associate degree professional nursing program or a hospital diploma program in professional nursing)

Southern Illinois University
Edwardsville 62025

College of Nursing
University of Illinois at the Medical Center
Chicago 60612

(prerequisite: 1 year of college study, stressing biology and chemistry)

College of Nursing
Area Health Education System - Region 3-B
University of Illinois
Champaign 61820

(program is only for students who are registered nurses [R.N.] in Illinois, and who have completed either an associate degree professional nursing program or a hospital diploma program in professional nursing)

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D) Master's Degree Programs in Nursing Specializations

(Prerequisite: Be a registered nurse (R.N.) and have completed a bachelor's degree in nursing. [Check with individual programs for professional nursing courses necessary for eligibility for admission to master's degree programs.] In order to be eligible for many graduate level nursing programs, the student must have completed an undergraduate program which is approved by the National League for Nursing -- check with undergraduate programs to see if they are so approved)

Required Special Training: approximately two years in a graduate-level professional nursing program, after which a master's degree is awarded.

Governor's State University Park Forest 60466	Offers three specializations: a) nursing practice b) nursing teaching c) nursing administration
Loyola University Chicago 60626	Offers three specializations: a) medical-surgical nursing b) psychiatric nursing c) maternal and child health nursing
Northern Illinois University DeKalb 60115	Offers four specializations: a) medical-surgical nursing b) maternal and child health nursing c) community health nursing d) nursing administration
St. Xavier College Chicago 60655	Offers one specialization: a) advanced nursing practice and teaching in psychiatric and/or mental health
College of Nursing University of Illinois at the Medical Center Chicago 60612	Offers five specializations: a) medical-surgical nursing b) psychiatric nursing c) maternity-midwifery nursing d) public health nursing e) nursing service administration
College of Nursing University of Illinois (Peoria Campus) Peoria 61606	Offers two specializations: a) medical-surgical nursing b) public health nursing (community and family nurse practitioner options)

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E) Doctoral Degree Program in Nursing Specializations

(Prerequisite: a master's degree in nursing)

Required Special Training: approximately three years in a doctoral level professional nursing program, after which a Ph.D. is awarded.

College of Nursing University of Illinois at the Medical Center Chicago 60612	Offers four specializations: a) nursing practice b) nursing education c) administration of nursing practice d) science applied to nursing

Employment Prospects

In 1974 employment opportunities for registered professional nurses (RN's) were plentiful in Illinois, and were expected to remain plentiful for the foreseeable future. Now and in the future, RN's with additional education will be able to select from career opportunities in education, administration, and nursing practice in these clinical fields: medical-surgical, maternal-child, public health, and psychiatric. New opportunities for nurses to work in preventative medicine and health maintenance services will probably become available if some form of national health insurance is adopted by Congress. Opportunities for employment in hospitals and extended care facilities will stay stable in terms of numbers, but will continue to demand new skills in specialty practice areas as further scientific advances are made in medicine. Some registered nurses with specialized advanced education will also find employment or practice opportunities as "nurse practitioners."

Salary

Financial rewards depend on education, job descriptions and responsibility, and geographic location. In 1974 nurses in larger cities earned more than those in rural areas, but usually this was offset by higher living costs in cities. Nurses with advanced education often found employment in responsible "leadership" positions in nursing and thus were paid substantially more. A recent study of salaries of registered nurses employed by non-federal hospitals in Chicago reported that a director of nursing earned, on the average, $329 weekly while the general duty staff nurse earned an average of $184 each week. Public health nurses earned just under $200 per week. Provision of fringe benefits by employers varied but usually included paid vacation and birthdays, participation in some type of retirement plan, insurance, and sometimes financial assistance to further education.

Career Mobility

Registered nurses must be licensed by the State Board of Nurse Examiners in the state where they are employed, or practice nursing. Graduation from an approved school, successful completion of an examination administered by the state board and certain other requirements must be met in order to become licensed. Once licensed

Career Mobility, continued

by a state, it is usually reasonably simple to get licensed in another state.

Registered nurses in "advanced nursing practice" positions may also need specialized certification. Probably because most registered nurses are women, there is a fairly high dropout rate from the labor market. Some do return to nursing full or part-time after family obligations have lessened. For the individual with a strong career commitment, there are numerous opportunities for a challenging career. As with any career, however, advancement may mean moving to a new area to take advantage of an excellent job opportunity; it definitely means participating in continuing education programs (which in some states will soon be required in order to maintain a license) and would probably require a master's or doctoral degree in nursing or a related area.

LPN's wishing to become registered professional nurses (RN's) should know that most community colleges offer proficiency tests for academic credit in their associate degree nursing programs.

LPN's wishing to become RN's and RN graduates of hospital diploma nursing program wishing to enter bachelor's degree nursing programs may also receive academic credit for some of their previous learning by successfully taking the New York College Proficiency Examinations in Nursing. Since not all professional nursing education programs will accept the results of these examinations, interested persons should contact those programs they are considering to see if this avenue of mobility is a real possibility.

A number of Illinois institutions have initiated upward mobility opportunities for LPN's and for those with no nursing education:

1) University of Chicago Hospitals and Clinics, Chicago: sponsors a diploma nursing program whereby LPN's can become RN's.
2) South Chicago Community Hospital, Chicago: sponsors a diploma program whereby LPN's can become RN's.
3) The Southern Illinois Collegiate Common Market, Carbondale: accepts LPN's from 4 LPN community college programs (John A. Logan [Carterville], Rend Lake [Ina], Shawnee [Ullin], and Southeastern [Harrisburg]) into its associate degree nursing programs.

Career Mobility, continued

4) Illinois Valley Community College [Oglesby] and William Rainey Harper College [Palatine]: have "ladder" nursing programs which give students the choice of either completing the first year of the nursing program and taking the LPN examination for licensure or continuing with the second year and taking the associate degree examination.
5) Evanston Hospital Nursing School, Evanston: admits students with differing learning abilities who may progress in the nursing program according to their own pace.
6) Michael Reese Hospital, Chicago: operates an enrichment program for nursing students who, because of prior inadequate educational preparation, do not qualify for admission to schools of nursing.

Further Reading

American Nurses' Association, Facts About Nursing '72-73

Robinson and Reres, Your Future in Nursing Careers, Richards Rosen Press, Inc., New York, 1972

Lysaught, Jerome P., An Abstract for Action, McGraw-Hill Book Company, New York, 1970

Professional Organizations Where More Information May Be Obtained

American Nurses' Association
2420 Pershing Road
Kansas City, Missouri 64108

National League for Nursing
10 Columbus Circle
New York, New York 10019

To Broaden Your Understanding

-Volunteer for work in a hospital or nursing home to learn if you might want to be a nurse

-Visit schools, hospitals, and nursing homes during "open house" days

-Where a club exists, join a high school future nurses organization

-Write to schools and professional organizations

PRACTICAL NURSE

For the student who wants direct and frequent patient contact but who does not choose a career in professional nursing, practical nursing could be a rewarding alternative. The licensed practical nurse (LPN) works with professional nurses, most often in the capacities of assistant and bedside nurse. The LPN functions as an assistant in complex and critical medical situations. In situations where the patient is not critically ill and the procedures are fairly simple, the LPN has more responsibility and, while not entirely independent, nevertheless functions without on-the-spot supervision.

The LPN attends to nearly all the patient's bedside needs: changing the linens, bathing the patient, feeding (when necessary), and assisting in personal hygiene, grooming, and physical movement. LPN's also perform such tasks as checking and recording temperature and blood pressure, and administering drugs and medications. In the event of an emergency, the LPN knows where to seek help and, when help is found, will assist in the emergency work. The LPN sterilizes equipment, prepares supplies and facilities to be used, prepares the patient for whatever special treatment is to be undergone, and applies first aid when necessary. At all times the LPN should be observant for any signs or symptoms in his/her patient(s) which should be reported to a doctor or professional nurse.

Because of the expanding professional responsibilities of registered nurses, the LPN is providing a large share of bedside nursing care. LPN's are employed in hospitals, public health agencies and rehabilitation agencies, private homes, physicians' offices, clinics, nursing homes, and such special institutions as psychiatric hospitals or children's hospitals. Many LPN's prefer to work in an area of nursing such as medical-surgical, intensive care, pediatrics, or psychiatric. There is an increasing demand for men as licensed practical nurses, especially in the area of psychiatric and rehabilitation nursing.

Qualifications and Education

Anyone considering a career in practical nursing should have a strong desire to help all kinds of people. The situations that confront LPN's daily may be depressing, ugly, even traumatic. And although hospitals are very clean places in which to work, working directly with sick and disabled persons sometimes brings the LPN into contact with unpleasant sights and odors which must be dealt with. The work frequently involves a lot of stooping, bending, and lifting. Good physical health as well as emotional stability, patience, tact, and understanding are key personal qualities wanted in a potential licensed practical nurse.

Educational programs are conducted in vocational schools, technical schools, some public high schools, adult education programs, hospitals, and community colleges. Entrance requirements vary: some hospital programs require the student to have a high school diploma or its equivalent while others do not (check with the program you are interested in); community colleges require a high school diploma or its equivalent for admission to the school. Training usually consists of one year of combined academic work and clinical experience; high school programs may last two years.

EDUCATIONAL PROGRAMS IN PRACTICAL NURSING - ILLINOIS

(Prerequisite: high school diploma or its equivalent)

Required Special Training: 1-year practical nursing program in a community college, hospital, area vocational center, or school of nursing; and passage of the examination which confers the designation L.P.N. (licensed practical nurse)

ALTON

Alton Vocational School of
Practical Nursing
Alton 62002

BLOOMINGTON

Bloomington School of
Practical Nursing
Bloomington 61701

CANTON

Spoon River College
Canton 61520

CARBONDALE

Southern Illinois Collegiate
Common Market*
Carbondale 62901

CARTERVILLE

John A. Logan College
Carterville 62918

CHAMPAIGN

Parkland College
Champaign 61820

CHICAGO

Chicago Public Schools--
Practical Nursing Center
1820 W. Crenshaw Street
Chicago 60612

CHICAGO, cont.

City College of Chicago
721 North LaSalle
Chicago 60610

St. Francis X. Cabrini School
of Practical Nursing
811 South Lytle
Chicago 60607

DANVILLE

Danville Junior College
Danville 61832

DECATUR

Decatur School of Practical
Nursing
Decatur 62523

DIXON

Sauk Valley College
Dixon 61021

EAST PEORIA

Illinois Central College
East Peoria 61611

EAST ST. LOUIS

East St. Louis School of Practical
Nursing
East St. Louis 62201

FREEPORT

Highland Community College
Freeport 61032

GALESBURG

Carl Sandburg College
Galesburg 61501

GODFREY

Lewis and Clark Community
College
Godfrey 62035

GRAYSLAKE

College of Lake County
Grayslake 60030

HARRISBURG

Southeastern Illinois College
Harrisburg 62946

HINSDALE

Hinsdale Sanitarium & Hospital
Hinsdale 60521

JACKSONVILLE

Jacksonville School of
Practical Nursing
Jacksonville 62650

JOLIET

Joliet Township High School
Joliet 60432

KANKAKEE

Kankakee Community College
Kankakee 60901

KEWANEE

Black Hawk College East
Kewanee 61443

LASALLE

St. Mary's Hospital
LaSalle 61301

MALTA

Kishwaukee College
Malta 60150

MATTOON

Lake Land College
Mattoon 61938

MOLINE

Black Hawk College
Moline 61265

MORTON GROVE

Oakton Community College
Morton Grove 60053

MOUNT CARMEL

Wabash Valley College
Mount Carmel 62863

MOUNT VERNON

Rend Lake College
Mount Vernon 62846

OGLESBY

Illinois Valley Community College
Oglesby 61348

PALATINE

William Rainey Harper College
Palatine 60067

QUINCY

Quincy School of Practical
Nursing
Quincy 62301

RIVER GROVE

Triton Junior College
River Grove 60171

ROBINSON

Lincoln Trail College
Robinson 62454

ROCKFORD

Rockford School of Practical
Nursing
Rockford 61109

SOUTH HOLLAND

Thornton Community College
South Holland 60473

SPRINGFIELD

Springfield School of Practical
Nursing
Springfield 62703

STREATOR

Streator Township High School
Streator 61364

ULLIN

Shawnee Community College
Ullin 62992

* The colleges in the Southern Illinois Collegiate Common Market include Rend Lake, John A. Logan, Shawnee, Southeastern Community, and Southern Illinois University.

PRACTICAL NURSE - Further Information

Employment Prospects

Most licensed practical nurses (LPN's) are employed in hospitals; others work in extended care facilities, home health agencies, industry, doctors' offices, and in private duty with individual patients. Allowing for population differences, Illinois has fewer LPN's than is average for other states. Illinois has a somewhat higher ratio of registered professional nurses than is average for all states, so that may affect the utilization of and need for LPN's. In 1974 employment prospects for practical nurses were very good in Illinois, and were expected to remain very good for the foreseeable future.

Salary

A salary study conducted by the American Hospital Association in mid-1973 indicated that the average beginning salary for LPN's in Illinois hospitals was slightly over $500 per month. The average salary for all LPN's working in hospitals was $565 per month. Generally, salaries for practical nurses usually were about 75% of those paid to professional nurses.

Career Mobility

Licensed practical nurses obtain a license to practice through the state board of nurse examiners. Licensure by one state usually provides ready access to licensure by other states. In most states, it is necessary to graduate from an approved school and successfully complete a written examination administered by the state. Since these requirements are set by each state, there are variations including the possibility in some states for licensure without completing an approved program for licensed practical nurses. This is the exception, not the rule and does not currently exist as an option in Illinois. The usual route for advancement of the nursing career is through additional education in order to qualify for licensure as a registered nurse.

LPN's wishing to become registered professional nurses (RN's) should know that most community colleges offer proficiency tests for academic credit in their associate degree nursing programs.

LPN's wishing to become RN's may also receive academic credit for some of their previous learning by successfully taking the New York College Proficiency Examinations in Nursing. Since not all professional

Career Mobility, continued

nursing educational programs will accept the results of these examinations, interested persons should contact those programs they are considering to see if this avenue of mobility is a real possibility.

A number of institutions in Illinois have initiated upward mobility opportunities for LPN's and for those with no nursing education:

1) University of Chicago Hospitals and Clinics, Chicago: sponsors a diploma nursing program whereby LPN's can become RN's.
2) South Chicago Community Hospital, Chicago: sponsors a diploma program whereby LPN's can become RN's.
3) The Southern Illinois Collegiate Common Market, Carbondale: accepts LPN's from 4 LPN community college programs (Common Market schools include John A. Logan College [Carterville], Rend Lake College [Ina], Shawnee Junior College [Ullin], and Southeastern Illinois College [Harrisburg]) into its associate degree nursing program.
4) Illinois Valley Community College, Oglesby; and William Rainey Harper College, Palatine: have "ladder" nursing programs which give students the choice of either completing the first year of the nursing program and taking the LPN examination for licensure or continuing with the second year and taking the associate degree examination.
5) Evanston Hospital Nursing School, Evanston: admits students with differing learning abilities who may progress in the nursing program according to their own pace.
6) Michael Reese Hospital, Chicago: operates an enrichment program for nursing students who, because of prior inadequate educational preparation, do not qualify for admission to schools of nursing.

Further Reading

American Nurses' Association, Facts About Nursing '72-73

National Federation of Licensed Practical Nurses, Bedside Nurse

National Association for Practical Nurse Education & Service, The Journal of Practical Nursing

Professional Organizations Where More Information May Be Obtained

National Federation of Licensed Practical Nurses
250 West 57th Street
New York, New York 10019

National Association for Practical Nurse Education and Service
122 East 42nd Street, Suite 800
New York, New York 10017

National League for Nursing
10 Columbus Circle
New York, New York 10019

To Broaden Your Understanding

-Volunteer for work in a hospital or nursing home to learn if you might want to be a nurse

-Visit schools, hospitals, and nursing homes during "open house" days

-Where a club exists, join a high school future nurses organization

-Write to schools and professional organizations

NURSING ASSISTANT

Nursing assistants in hospitals and nursing homes help nurses in providing many services related to the comfort and welfare of patients. Nursing aides, the term usually applied to female assistants, help practical and professional nurses by performing less skilled tasks in the care of patients.

Orderlies and attendants, occupational titles usually applied to male nursing assistants, assist practical and professional nurses by performing a variety of duties for male patients and certain tasks in the care of the physically ill, mentally ill, and mentally retarded.

Nursing aides, orderlies, and attendants do the following work activities:

- bathe, dress, and undress patients
- assist in personal hygiene of patients
- serve and collect food trays and help feed patients who need assistance
- transport patients using wheelchairs or aid them in walking
- take and record temperatures, pulses, respiration rates, and food intake and output, as directed
- apply ice bags and hot water bottles
- give alcohol rubs
- clothe patients in preparation for examinations and treatments, and remain with them
- collect charts, records, and reports, and deliver them to authorized persons
- collect dirty linen and store clean linen
- answer signal lights and bells to determine patients' needs
- report all unusual conditions or reactions of patients to the nurse in charge

It has been estimated that there were a total of 875,000 nursing assistants employed in the U.S. in 1972, of which nearly 600,000 worked in hospitals.

Qualifications and Education

Those considering working as a nursing assistant ought to have a liking for people, and considerable understanding for the needs of sick people. The work situations that the nursing assistant frequently faces may be depressing, ugly, even frightening. And although hospitals are very clean places in which to work, working directly with sick and disabled persons sometimes brings the nursing assistants into contact with unpleasant sights and odors which must be dealt with. The work frequently involves a lot of stooping, bending, and lifting. Good physical health and strength as well as emotional stability, patience, tact, and understanding are desirable qualities.

Although there are no standard educational requirements for becoming a nursing assistant, vocational centers, clinics, and hospitals provide instructional programs. The on-the-job training programs given by clinics and hospitals often include classroom instruction, demonstrations and practice, taught by a professional nurse.

EDUCATIONAL PROGRAMS IN NURSE ASSISTING - ILLINOIS

Required Special Training: Either a) on-the-job training available in most hospitals, and in some clinics, or b) a short training program in a community college. (Many Illinois high schools participate in Area Secondary Vocational Centers, some of which offer nurse assisting programs.)

Nurse Assistant

Carl Sandburg College
Galesburg 61401

Joliet Junior College
Joliet 60436

McHenry County College
Crystal Lake 60014

Parkland College
Champaign 61820

Spoon River College
Canton 61520

State Community College of East St. Louis
East St. Louis 62201

Employment Prospects

In 1974 there were numerous jobs available for nursing assistants (nurses' aides, orderlies, and attendents). There will continue to be job openings in the coming years.

Salary

In 1974 salaries were low, and they will probably continue to be low in the coming years. In mid-1973 a salary study conducted in Illinois hospitals indicated that beginning nursing aides earned starting salaries ranging from a low of $260 per month to a high of $574 per month. Average starting salaries in Illinois were $400 monthly for beginning workers, and $440 for all nursing assistants.

Career Mobility

In most hospitals there is no upward career mobility. In other words, there are no opportunities for nursing assistants to receive significantly greater responsibility and substantially higher pay.

Further Reading

Isler, Charlotte, The Nurse's Aide in the Hospital, Springer Publishing Company, Inc., New York, 1968

Professional Organizations Where More Information May Be Obtained

(Nursing assistants have no professional organization. Local hospitals and nursing employees are a source of information about the work of the nursing assistant)

To Broaden Your Understanding

-visit a hospital or nursing home and talk to nursing assistants, practical nurses, and professional nurses about their work

-contact the personnel office of a local hospital and find out about salaries, fringe benefits, and if there are any real opportunities for eventually receiving increased responsibility and higher pay.

NURSE ANESTHETIST

Any surgical procedure involves a concerted group effort on the part of doctors, nurses, and technicians. Each performs a specific role which benefits the health of the patient. A primary person on the surgical team is the nurse anesthetist. He/she is responsible for administering the pain-killing drugs and/or gases collectively known as anesthetics. Anesthetics maintain the patient in a painless state during the course of an operation or the delivery or a baby.

The nurse anesthetist is responsible for setting up the necessary equipment for operations and testing equipment to insure proper function. When a patient arrives for surgery, the nurse anesthetist positions him, records his blood pressure, respiration, pulse, and blood type, and when the doctors are ready, applies the anesthetic. In addition, the nurse anesthetist prepares pre-operation medications for intravenous injection as prescribed by the supervising physician.

During an operation the nurse anesthetist maintains the patient in an anesthetized state, either by regulating the gas and oxygen flow or by administering intravenous injections. He continues to keep a constant record of the patient's vital life signs and informs the doctor of any change in these signs.

Following an operation, the nurse anesthetist assists in moving the patient to the recovery room, periodically checks the patient for undesirable symptoms due to the anesthesia, and submits a post-operative report to the physician in charge. Additional duties include dissembling and sterilizing equipment, removing supplies, requesting additional supplies, and repairing any defective equipment used in anesthesia.

Most nurse anesthetists work in hospitals. A few are employed by dentists to administer anesthetics to dental patients.

Qualifications and Education

Persons interested in this field ought to enjoy being helpful to people undergoing surgery and childbirth. They should be able to learn to work under stressful conditions, and to reacte quickly and efficiently on occasions when patients develop dangerous symptoms.

In order to become a nurse anesthetist, a professional nursing program and at least one year of nursing experience must be completed. Following that, a professional training program in anesthesia is required. Most of these programs are 24 months in length.

(Prerequisites: completion of a professional nursing program and registration as a nurse (R.N.), plus at least 1 year of work experience as a nurse in an acute care unit. Oftentimes, a college chemistry course is also required [graduates of hospital nursing programs would be viewed as lacking in chemistry])

Required Special Training: a professional training program in anesthesia, 24 months in length, except shorter in length where noted.

Nurse Anesthetist

Decatur Memorial Hospital
Decatur 62526

McHenry Hospital
McHenry 60050

Presbyterian-St. Luke's Hospital
Chicago 60612

Ravenswood Hospital
Chicago 60640

St. Francis Hospital (18-month program)
Peoria 61603

St. John's Hospital (18-month program)
Springfield 62701

NURSE ANESTHETIST - Further Information

Employment Prospects

In 1975 employment prospects in Illinois and in the nation were very good. Smaller hospitals were experiencing more difficulty than larger ones in attracting nurse anesthetists to work for them due to more exhausting working conditions and somewhat lower salaries. Overall, employment prospects were expected to remain very good during the next decade.

Salary

Starting salaries in Illinois for nurse anesthetists ranged from $14,000 to $20,000 in 1975. Salaries increased with added work experience and responsibilities.

Career Mobility

With the accumulation of successful work experience, nurse anesthetists may assume supervisory and administrative responsibilities over other nurse anesthetists. Those with an interest in teaching may become instructors in hospital educational programs for the preparation of nurse anesthetists.

Further Reading

Journal of the American Association of Nurse Anesthetists

Nursing Outlook journal

Professional Organization Where More Information May Be Obtained

American Association of Nurse Anesthetists
111 East Wacker Drive
Chicago, Illinois 60601

To Broaden Your Understanding

-do volunteer or paid work related to nursing in a hospital or nursing home

-talk to nurse anesthetists and other kinds of nurses about their work

-write to schools and the professional organization

HOMEMAKER - HOME HEALTH AIDE

Nursing agencies and social service agencies concerned with assistance to the homebound have come to rely with increasing frequency on a relatively new category of worker -- the home health aide. The home health aide, sometimes called home aide or visiting health aide, is involved with the physical and simple health needs of the homebound, or disabled person.

Typical assignments might include bathing or exercising a convalescent person or semi-invalid; seeing to it that the patient takes his medicine; keeping in touch with the nurse or doctors, as to the patient's condition. The health aide would also assist in the preparation of meals and help feed the patient.

The agencies most likely to employ and assign these workers are local health departments, welfare dependents, private social work agencies, hospitals, or community voluntary agencies.

Qualifications and Education

Persons considering becoming home health aides should enjoy helping people who cannot adequately help themselves in doing routine daily activities. Aides should be able to accept the inability of patients to fully take care of themselves.

Home health aides are recruited primarily from among mature women who have had experience in bringing up their own families, and also from among young people seeking job training. Training courses range from 40 to 120 hours, and combine instruction in homemaking and home health care.

Training is provided by public health agencies, welfare agencies, visiting nurse agencies, voluntary family and children's service agencies, state and community mental health agencies, hospitals which provide home care services, and community colleges. The courses include training in household management, nutrition, infant and child care, and personal care. On completion of class work, trainees receive on-the-spot training, working under the supervision of a public health nurse, social worker, occupational therapist, nutritionist, or other health professional.

EDUCATIONAL PROGRAMS FOR THE HOMEMAKER-HOME HEALTH AIDE - ILLINOIS

Required Special Training: Training of at least 40 hours, and usually 120 hours, in most cases provided by the agencies which will hire those completing the training. Such agencies include: public health, welfare, visiting nurse, voluntary, family and children's service, state and community mental health agencies. In addition, some hospitals and community (junior) colleges offer training programs. (For more information, contact agencies listed above or the following community colleges.)

Homemaker - Home Health Aide

Danville Junior College
Danville 61832

Parkland College
Champaign 61820

State Community College of East St. Louis
East St. Louis 62201

HOMEMAKER - HOME HEALTH AIDE - Further Information

Employment Prospects

In 1974, the National Council for Homemaker-Home Health Aide Services stated that, ideally, there ought to be 300,000 homemaker-home health aides employed in the nation, whereas there were actually only 45,000 employed part-time and full-time. These were virtually all women and they tended to range in age from 40 to 65. It was not possible to determine 1974 Illinois employment prospects. In the coming years, employment prospects for the nation as a whole appeared good due to the trend toward recognition that it is frequently desirable to care for children, the elderly, and the sick in their homes. It was expected that the eventual acceptance of this idea by the federal government would result in greatly increased aid to agencies training and employing homemaker-home health aides.

Salary

Salaries were generally low -- oftentimes at the minimum hourly wage level. Efforts to increase salaries significantly were being made. In larger cities, some experienced homemaker-home health aides earned as much as $7,000 - $8,000 yearly.

Career Mobility

Within this field there are opportunities for assisting in training, mid-level supervision, and the assignment and record keeping of the activities of homemaker-home health aides. Some homemaker-home health aides work in a specialized setting, such as assisting a therapist in the care of physically or mentally handicapped persons.

Further Reading

None

Professional Organization Where More Information May Be Obtained

National Council for Homemaker - Home Health Aide Services, Inc.
67 Irving Place - 6th Floor
New York, New York 10003

To Broaden Your Understanding

- visit an agency employing homemaker-home health aides and talk to an aide and to a supervisor of aides
- write to schools and contact agencies which provide training
- write to the professional organization

OPERATING ROOM TECHNICIAN

The operating room technician [ORT] is a vital member of the surgical team His/her duties are numerous and essential to the smooth functioning of the doctors and nurses involved in an operation and/or delivery of a baby. The technician functions under the direction of the operating room supervisor who is a registered nurse. Under the nurse's supervision, the technician prepares the operating room for surgery, arranging and sterilizing the equipment and instruments to be used. Supplies of such fluids as plasma, blood, and glucose are also checked and maintained by the technician, in case they should be needed. When the patient arrives, the technician assists in the proper positioning of the patient. If specimens are to be taken or dressings applied, the technician assists in these tasks. At all times the technician is there to comfort and reassure the patient.

As the operation begins, the ORT may be called upon to assist the anesthesiologist. During the operation, he/she assists the surgeon, handling all the sterilized instruments and equipment. Following an operation, the ORT helps to clean up the operating room and prepare for the nest operation.

Operating room technicians are employed in hospitals and large clinics having a surgery department. Because most training programs are either at hospitals or, in the case of community college programs, taken partially in affiliated hospitals, most technicians find employment at the hospital where they were trained.

Qualifications and Education

A student desiring to become an operating room technician should be emotionally stable and reliable. These are two qualities that are at a premium in the operating room. Often the atmosphere is quite tense. the doctors are under a lot of strain, and a patient's life may be at stake. The ORT must be able to function well under these circumstances. He/she must possess good judgement, understand and respond to directions quickly, and be able to anticipate to some extent the needs of the other members of the team. In addition, the prospective technician should have good physical stamina -- operations very often mean long hours on one's feet.

Operating room technology programs are usually one year in length and are offered throughout the country in hospitals and community colleges. The prerequisite for a program is usually a high school diploma or its equivalent.

EDUCATIONAL PROGRAMS FOR THE OPERATING ROOM TECHNICIAN - ILLINOIS

Required Special Training: Either a) classroom study and on-the-job clinical experience in a hospital or b) 1-year program for training as an operating room technician in a community college.

Operating Room Technician

Belleville Area College
Belleville 62221

Blessing Hospital
Quincy 62301

Copley Memorial Hospital
Aurora 60507

Decatur Memorial Hospital
Decatur 62526

Illinois Central College
East Peoria 61611

Kaskaskia College
Centralia 62801

Malcolm X College
Chicago 60612

Moline Public Hospital
Moline 61265

Moraine Valley Community College
Palos Hills 60465

Parkland College
Champaign 61820

Rend Lake College
Ina 62846

St. Elizabeth Hospital
Granite City 62040

St. John's Hospital
Springfield 62701

Triton College
River Grove 60171

William Rainey Harper College
Palatine 60067

OPERATING ROOM TECHNICIAN - Further Information

Employment Prospects

In 1975, employment prospects in Illinois were excellent, and were expected to continue to be good for the next decade.

Salary

Beginning salaries for operating room technicians in the Chicago area ranged from $3.00 to $3.50 per hour in 1975. Elsewhere in Illinois salaries were somewhat lower, averaging $2.65 to $2.85 per hour. Operating room technicians with five years of work experience received about $3.75 per hour in Illinois outside of Chicago, and somewhat more in Chicago.

Career Mobility

Operating room technicians work under the direction of a registered nurse; thus there are no opportunities for capable operating room technicians to advance to supervisory positions over other operating room technicians. In some cases, an outstanding operating room technician may be assigned to a surgical team which performs very complex surgery--such as open heart surgery. Sometimes she/he will then receive higher pay. After a few years of work experience in surgery, or less often, in the delivery, emergency, or recovery rooms of a hospital, many operating room technicians return to school to become nurses. After becoming registered nurses, many of them return to work in the operating room setting, but this time with expanded responsibilities and higher pay. In a few cases, operating room technicians are not employed in a hospital, but are hired to work exclusively for one or more surgeons.

Further Reading

Or Tech, a journal published by the Association of Operating Room Technicians, Inc.

Kinsinger, Robert E., editor, *Health Technicians*, J.G. Ferguson Publishing Company, Chicago, 1970, pp.158-165

Professional Organization Where More Information May be Obtained

Association of Operating Room Technicians, Inc.
1100 West Littleton Boulevard, Suite 101
Littleton, Colorado 80120

To Broaden Your Understanding

-talk with operating room technicians, nurses, and surgeons (the operating room technician functions as a member of a surgical team; the interested student should try to get a good idea of the stress involved in the work of the operating room technician, and and try to understand what qualities she/he must develop in order to function as an effective worker)

-try to get volunteer or paid work experience in a hospital or nursing home

-write to schools and the professional organization

PUBLIC HEALTH PROFESSIONAL / ENVIRONMENTAL HEALTH PROFESSIONAL

The good health of our people depends as much on the prevention of illness in people and in making healthful the environment in which we live as it does on the treatment of the sick, injured, and disabled. The prevention of the conditions that result in a contaminated environment is the mutual concern of the environmental and public health professionals. These health workers have a diversity of educational experience and backgrounds.

The nation's growth and productivity have contributed to many complex environmental problems that seriously challenge man's health and well-being. Included are problems related to the pollution of air, water, soil, and contamination of food; occupational and community stresses, noise, temperature, and vibration; inadequate housing and work environments; highway and home hazards; and radiation and other hazards.

Environmental health represents a diverse area of work; thus, it draws heavily on the well-established disciplines. These include: chemistry, physics, and biology of many specialties; hydrology; meteorology; oceanography; engineering; sanitation; ecology; medicine of several specialties; law; mathematics; statistics; political science; economics; and social science.

Persons in these disciplines are engaged in the following activities related to environmental health: 1) carrying out technical and administrative-legal functions concerned with prevention and control programs, 2) planning, implementing, and directing general and specific programs; 3) conducting relevant research and development; 4) conducting investigations, surveys, and surveillance programs; and 5) teaching at all levels of education and training.

This section is concerned basically with those fields primarily related to prevention and control of disease and the delivery of direct health services to people.

The environmental engineer applies engineering and scientific principles and practices to the prevention, control, and management of environmental factors that may influence man's physical, mental, and social health and well-being.

Most engineers now enter the environmental health field at the bachelor's degree level, having completed curriculums in civil, chemical, or mechanical engineering.

The sanitarian, sometimes known as an environmentalist, applies his knowledge of the principles of the physical, biological, and social sciences in the improvement, control, and management of man's environment.

Sanitarians perform a broad range of duties. They safeguard the cleanliness and safety of the food people eat, the liquids they drink, and the air they breathe. They inspect food manufacturing and processing plants, dairies, water supplies, and other places for health hazards. They seek compliance with local regulations and with state and federal laws relating to public health. They also plan, conduct, and administer environmental health programs, and promote the enactment of health legislation.

The minimum educational requirement usually is a bachelor's degree, with emphasis on the biological, physical, and sanitary sciences.

Industrial hygiene personnel include industrial hygienists, engineers, chemists, nurses, toxicologists, physiologists, dermatologists, environmental hygienists, technicians, or other similar occupational designations. Basic industrial hygiene activities include the recognition, evaluation, and control of those environmental factors that have an adverse effect on health and efficiency of workers in places of employment or among citizens of the community. These specialists are essentially concerned with four categories of stresses: a) toxic chemical agents such as dusts, gases, plastics, and pesticides, b) physical agents or energy stresses such as excessive noise, temperature extremes, and radiations, c) biological hazards such as infectious agents and enzymes, and d) other work-related stresses such as monotony, rigors of work process, and equipment design.

Industrial hygiene personnel examine the work environment for identification and determination of unhealthy conditions such as excessive noise and inadequate ventilation; for collection of samples for chemical analysis; and for recommendations for the control of hazardous conditions.

In federal agencies and in large industrial companies, they may also conduct research studies on toxicity of materials, analytical methods, and field instrumentation. In such organizations, occupational health programs may also be staffed with physicians, nurses, toxicologists, radiation specialists, and laboratory personnel in offering a comprehensive preventive health program for workers. Industrial hygiene personnel in state and local official agencies provide various consultation and technical services to workplaces within their jurisdiction.

Environmental industrial hygiene personnel are employed by manufacturing and other industrial and commercial enterprises, insurance companies, universities, federal agencies, and state and local official agencies.

Radiation protection personnel at the professional level include health physicists, engineers, chemists, biologists, and other scientific and technical occupations with special training in the health aspects of radiation. The radiation exposure problems with which they are concerned are associated with the use of electronic products, such as X-ray machines, particle accelerators, microwave ovens and color television sets, radioactive materials, and nuclear reactors, as well as environmental radioactive contamination. Their work is conducted principally in industrial, medical, research, or educational institutions that use radiation sources, and in health agencies that have responsibility for protection of the public health.

State and local public health departments are the official government agencies responsible for providing leadership in making the community a healthier and safer place in which to live. The health department may administer programs concerned with general health services, specific medical care services, and/or environmental control related to health. With few exceptions, the health officer or commissioner is a physician who usually has had public health training and experience. The health officer, as chief executive of the health department, administers the direct services for which responsibility is assigned to his department by law. He also assumes leadership in stimulating community-wide cooperation and action to strengthen gaps in health practices and services in the area.

In larger public health departments, the work of the health officer is bolstered by a public health administrator. This executive has responsibility for organizing, planning, and directing such functions as budget, personnel, procurement, legal and related administrative services, and perhaps statistics, research, and other professional programs. He has professional competence in administrative practices and procedures, particularly as they relate to public health programs. His training may have been in a school of public health.

A specialist frequently included on the staff of larger health departments is the health program analyst. This person is a planning specialist --a professional expert in his own right, with basic training in some field such as statistics, economics, or sociology. He may also be known as a public health analyst or specialist.

The director of each program in the health department probably has on his staff a health program representative. This position requires someone with a bachelor's degree, although he may not be trained in a specific health profession. This public health representative or public health advisor takes part in promoting public public participation in new health services, program planning, and fact gathering.

Another important specialist in the public health department is the public health nurse. Working in settings such as community clinics, hospitals, schools, industry, and visiting nurse associations, it is the responsibility of the public health nurse to provide family- and community-centered services such as the provision of health education and prenatal care information for expectant mothers, caring for bedridden patients, making referrals to community social service agencies and to physicians.

Qualifications and Education

The several fields described in this section require a variety of personal and educational qualifications. The following pages, 9-A-4 to 9-A-6, "Educational Programs in Public and Environmental Health," are only a partial listing of educational programs which are appropriate for persons considering public and environmental health professions. Therefore, students interested, for instance, in public health nursing or environmental engineering, should also learn about educational programs more directly to the field (that is, nursing or engineering, in the cases above).

EDUCATIONAL PROGRAMS IN PUBLIC AND ENVIRONMENTAL HEALTH - ILLINOIS

(Persons with a college degree in environmental or public health may pursue a variety of kinds of employment, depending on their educational background, their interests, and the job market)

Public Health

Governor's State University Park Forest South 60466	(prerequisite: 2 years of college; offers bachelor's degree in "Human Ecology" with an orientation in environmental planning)
Northwestern University Chicago 60611	(prerequisite: a bachelor's degree, preferably with a background in the sciences; program is 1 year, after which a master's in public health (M.P.H.) is awarded
School of Public Health University of Illinois at the Medical Center Campus	(offers two programs-prerequisite for both: a bachelor's degree preferably with a background in the sciences.1) 1-year program, after which a master's in public health (M.P.H.) is awarded, 2) 2-year program after which a master of science in public health (M.S.P.H.) is awarded

Environmental Health

Governor's State University Park Forest South 60466	(prerequisite: 2 years of college; offers bachelor's degree programs in environmental analysis and environmental conservation; offers master's degree programs in environmental analysis and environmental management)
Illinois Institute of Technology Chicago 60616	(offers an environmental engineering major through the doctoral level)
Illinois State University Normal 61716	(offers a bachelor's degree program only in environmental health through the Center for Allied Health Professions)
Northwestern University Evanston 60201	(the Engineering Department of the Technological Institute offers an interdisciplinary bachelor's degree program in environmental engineering)

Environmental Health, continued

Southern Illinois University Carbondale 62901	(offers an option - "Thermal & Environmental Engineering" - in the engineering major. Program is through the master's degree level)
* University of Illinois Urbana 61801	(curriculum in general engineering offers a concentration in environmental quality; department of civil engineering offers master's and doctoral degree programs in "Environmental Engineering in Civil Engineering"; also, the Environmental Studies Program provides coordination and support for the development of inter- and multidisciplinary programs of research, teaching, and public services in the general area of environmental studies)

Environmental Health Technician

(Some of the programs listed below give preparation only in water technology; others include instruction in the areas of air and food as they relate to environmental health)

Carl Sandburg College Galesburg 61401	(1-year certificate program in public service - water division option)
Loop College Chicago 60601	(certificate program [22 semester hours in length] in wastewater technology)

Environmental health Technician, continued

Olive-Harvey College Chicago 60628	(2-year associate degree program plus 2 certificate programs (11 and 15 semester hours in length) in environmental control technology)
Prairie State College Chicago Heights 60411	(2-year associate degree program in air, water, and wastewater control technology)
Rock Valley College Rockford 61101	(2-year associate degree program in occupational health and safety technology - a program concerned with the detection and remedying of health hazards in work settings)
Shawnee College Ullin 62992	(three 1-year certificate programs: 1) wastewater treatment technology, 2) water treatment technology, 3) water/wastewater technology)
Triton College River Grove 60171	(2-year associate degree program in occupational safety and health --a program concerned with the detection and remedying of safety and health hazards in work settings)

PUBLIC HEALTH PROFESSIONAL / ENVIRONMENTAL HEALTH PROFESSIONAL -

Further Information

Employment Prospects

There is a need for capable public and environmental health professionals in Illinois as well as elsewhere in the nation. Our society's increasing awareness of the importance of maintaining the health of all our people means there is a growing need for public and environmental health workers.

Salary

There are a great many kinds of work included under the heading of public and environmental health professionals. The education and experience necessary to enter these fields differs greatly. Therefore, it is not possible in a paragraph or two to meaningfully discuss salaries. Salaries are comparable to those earned by health workers with similar background and experience.

Career Mobility

A number of kinds of public and environmental health work requires skills possessed by persons with bachelor's degrees. On the other hand, many jobs which require the conducting of research, the supervision of others, or the administration of a department or organization, require advanced college degrees and successful related work experience. Persons with the appropriate combination of educational background and work skills can find opportunities for advancement within a single organization or in other organizations.

Further Reading

Weiss, Laura Burstein and Spence, Ann Bennett, A Guide to the Health Professions, Cambridge, Massachusetts: Harvard University Printing Office, September 1973, pp. 11-26, 45-58

Journal of Environmental Health, a journal published by the National Environmental Health Association

American Journal of Public Health, a journal published by the American Public Health Association

Daniel M. Wilner, Rosabelle Price Walkley, and Lenor S. Goerke, Introduction to Public Health, 6th edition, 1973, New York: Macmillan and Company

PUBLIC HEALTH PROFESSIONAL / ENVIRONMENTAL HEALTH PROFESSIONAL -

Further Information, Continued

Professional Organizations Where More Information May Be Obtained

Illinois Environmental Protection Agency
2200 Churchill Road
Springfield, Illinois 62706

National Environmental Health Association
1600 Pennsylvania Street
Denver, Colorado 80203

American Public Health Association
1015 18th Street, N.W.
Washington, D.C. 20036

Association of Schools of Public Health
1825 K Street, N.W., Suite 707
Washington, D.C. 20036

To Broaden Your Understanding

-visit your local (or nearest) public health department to get an idea of the kinds of health services it provides

-obtain volunteer or paid work experience in a health care facility

-write to schools and professional organizations

ENVIRONMENTAL HEALTH TECHNICIAN

The great amount of attention recently accorded our environment and man's pollution of it has given rise to a new technical health worker: the environmental health technician. A graduate of a 2-year community college program in environmental health technology may work with scientists, engineers, sanitarians, urban planners, or other specialists concerned with environmental protection, gathering data for use in determining ways to improve the quality of our environment and bring a halt to its growing decay. The duties of the environmental health technician are varied. They may involve working in the field, gathering data and samples; they may involve extensive laboratory testing and record keeping. The inspection of food processing plants, restaurants, cafeterias, public restrooms, and public swimming areas or the operation, maintenance, and supervision of waste water and filtration plants are other activities that involve the environmental health technician.

Environmental health technicians can be found working in public health departments, housing departments, hospitals, university environmental health departments, nuclear power companies, industry, and agriculture.

Qualifications and Education

A strong interest in and concern for the environment are primary qualifications if one is to gain satisfaction from this field. In many cases an enjoyment of the outdoors is helpful as much of the technician's work may be done outside. For those employed in a laboratory setting, an aptitude for performing technical laboratory procedures would be useful. In many work situations, it is important for the health technician to record information, analyze and summarize it in writing, and then present it orally in a persuasive manner.

Education for becoming an environmental technician involves 2 years of study at a community college in the field of environmental health technology. High school courses in science (biology, chemistry and/or physics) and mathematics (algebra and geometry) would be good preparation for later coursework taken at the community college level. A college program in environmental health technology would probably include additional chemistry and math as well as zoology, microbiology, English and public speaking, and courses directly related to the field such as air pollution control, water pollution control, food and milk sanitation, and environmental health administration.

ENVIRONMENTAL HEALTH TECHNICIAN - Further Information

Employment Prospects

In 1975 employment prospects for environmental health technicians were quite good. It was believed that they would improve somewhat in future years.

Salary

In 1975 beginning salaries for graduates of 2-year programs in environmental health were between $7,000 and $9,000 per year. Typically, technician salaries increased slightly with each year of work experience.

Career Mobility

In many cases, the scope of the responsibilities of environmental health technicians does not increase with accumulated experience. Technicians perform a great variety of duties, oftentimes out-of-doors. Promotion to supervisory positions is not likely without the completion of a bachelor's degree in environmental health or a related field.

Further Reading

Journal of Environmental Health, a journal published by the National Environmental Health Association

Professional Organization Where More Information May Be Obtained

National Environmental Health Association
1600 Pennsylvania Street
Denver, Colorado 80203

To Broaden Your Understanding

- visit your local public health department and talk to the technicians working there about their work
- obtain paid or volunteer employment with your local health department
- write to schools and the professional organization

Health Educator

It is the function of the health educator to give people the facts about health and disease so they will act for their own well-being and that of their families.

The health educator tells people about the dangers of smoking so they will be persuaded to quit, the importance of regular health checkups so they will get them, the hazards of overweight so they will eat sensibly, and the importance of polio "shots" so they will get them.

This states the function of the health educator in simple terms but the process is much more complicated.

The health educator seldom talks directly to the people he hopes to influence. He works, instead, through a wide variety of intermediaries in the community—teachers, club leaders, health officers, public health nurses, trade-union program directors, Scout leaders, community group leaders, and others. Through these intermediaries he reaches a much larger audience than he would by himself. There is, however, another reason for working through them. These are "opinion molders"; they have a personal relationship with those being educated and are therefore likely to have a greater influence with them.

The health educator will meet with groups of these intermediaries and work out health education programs with them to be incorporated in their regular daily activities. He also prepares or directs the preparation of guides for conducting these educational activities and the materials (leaflets, films, exhibits, slides, posters, etc.) that are going to be used.

The health educator also works with another type of intermediary—the mass media (newspapers, magazines, radio and television, trade newspapers, organizational newsletters, etc.). He either prepares or directs the preparation of the appropriate articles, features, photographs, which can be used by the media, or he works with the writers, editors, or program directors so they can prepare it. As a result, the influence of the health educator is extended to vast audiences who could not otherwise be reached.

Admittedly, contact with the public through the media is less desirable than personal contact. Nevertheless, it is the maxim of health education, as of other educational efforts, that many methods are used to complement and reinforce each other and to have a cumulative effect.

The ultimate goal of health education is action—getting the person being educated to take the necessary steps for preservation of health or safety. But this goal is not always achieved. Most smokers, for example, keep on smoking no matter how many times they have had the danger pointed out to them. Few people use their auto safety belts, despite the repeated messages on television on the importance of using them. The dangers of alcohol and drug abuse are being repeatedly dinned into the minds of young and old, yet alcoholism and drug addiction continue to increase. Considerable health education goes on with the populations of "inner cities" and "ghettos." Yet, much of it is ignored.

The educator has recognized that it is not enough just to point out the hazards of a particular practice or the advantages of another. There are all sorts of obstacles to perception and appropriate action. These might be emotional resistances, language barriers, social and economic barriers, psychological blocks, and so on.

Whatever they are, it is the job of the health educator to identify and then devise methods to overcome them or sidestep them. Otherwise, education will have no effect, or, to put it more properly, education will not take place, since education is more than information—it is successful motivation for effective action.

To get at the bottom of these resistances, the health educator may use various techniques of investigation: interviews, surveys, community studies, together with the insights gained from psychology and sociology.

A basic tenet of the health educator is that final decisions about health practices should be made by the individuals involved. Nevertheless, he accepts a responsibility to provide access to all sources of information and experiences needed by the individual so he can relate desirable health practices to his personal goals, aspirations, and values—the things he cares about.

The health educator thus serves as a psychological stage-setter—stimulating people in the community to recognize health problems of which they may be unaware and to work for their solution. Such problems might have to do with pollution of the environment, chronic disease, overpopulation, drug abuse, or any of hundreds of ills which plague our society today. The health educator knows that constructive group action can often accomplish wonders in behalf of health. Even more important, when people themselves work together to solve a problem of common concern, they will arrive at the solution which will work for them.

Moving along with an interested group when it is ready to act, the health educator will help its members set up effective working relationships with other interested groups in the community—schools, churches, health agencies, welfare organizations, labor unions, and the like. Perhaps the health educator will assist them in organizing a conference, planning a neighborhood cleanup campaign, or developing a television series dramatizing poor health conditions in farm labor camps. He may contact resources, coordinate interagency efforts, or administer other aspects of the program. Whatever his duties may be in any particular case, his aim is to encourage more effective individual and group action designed to maintain and improve the health of people throughout the community.

The health educator is prepared to use any number of very different methods of communication—whatever the situation calls for. He is expert in a variety of individual, group, and community educational approaches, as well as in how a wealth of educational media and materials can be used most effectively. He experiments with new educational techniques, such as closed circuit television and teaching machines, to find how they can be utilized optimally in the health field. Sometimes he helps a group create its own educational materials—an experience which often leads to greater learning than could ever result from exposure to the most polished professional teaching aids.

Sometimes the problems in taking health action lie not with the community, however, but with the people providing health services. Clinic hours may be arranged more for the convenience of the professionals than of the public. Clinic workers may be curt and impersonal in their treatment of the people they serve. Advice may be given in technical terms rather than in language that people can easily understand. In those cases, the health educator can play an important role by helping other health personnel plan and deliver health care in ways which the community can and will use. Similarly, the health educator often has a job to do in educating legislators and other policymakers that consumer interests must be considered in planning and funding health programs.

With major changes taking place in the delivery of health care at local, regional, and national levels, participation of health educators in planning groups is increasingly in demand. By seeking the involvement of all persons who have an interest in the problem, the health educator helps assure that it is understood from each of the many dimensions which bear on its solution. He utilizes group skills and understandings to aid each member of the planning team express his own ideas and listen to other points of view. He helps define common goals and stimulates and guides discussion as necessary to help the group reach its own decisions and determine how they will be carried out. Thus, whether helping a ghetto neighborhood to plan its own health center or helping representatives from State agencies to agree on needed regional medical facilities, the health educator helps people to help themselves by bringing needs and resources together to create new partnerships for health.

Frequently, improving health care involves training—for health workers who need to keep abreast of new knowledge in their own professional disciplines through continuing education; for young people entering new health careers; for neighborhood health aides who will help to improve health communications among the poor; for citizen volunteers who are ready to assume new community leadership. Here again, the health educator can contribute to better health by consulting on the development of training programs, by suggesting creative methods, and even by training the trainers themselves to be better teachers.

Health educators, then, are modern pioneers—seeking new understanding into human behavior, new ways to apply this knowledge in health education, and new approaches to building stronger and healthier communities.

Qualifications and Education

Health education is a relatively new profession; consequently, individuals with many kinds of backgrounds have been and are now working as health educators. Some have strengths in administration or social welfare, or public information, or community organization. Some were at one time in nursing, teaching, environmental health, and similar occupations. Many of these people, who saw this new field of education developing and liked its looks, reinforced their college background where necessary, especially in the physical and social sciences and education. Some went on to professional study in the field of health education.

Today the requirements for becoming a qualified health educator are more exacting, and all the signs point in the direction of strengthened professional standards. Leadership position in the field require a master's degree. This includes training in fundamental public health areas, such as disease control and environmental health. It also includes in-depth preparation in educational program planning and theory and methods analysis of health education problems. Most master's degrees in health education are offered by schools of public health, although a few universities without such schools have recently been accredited to provide such training. Many of these institutions have available financial assistance of one sort or another to enable deserving applicants to complete their professional training.

An increasing number of colleges and universities are now offering a bachelor's degree in community health education. These programs (with instruction in the biological and social sciences and basic health education skills) prepare the student for many community jobs as well as for graduate study if he so desires. A bachelor's degree with a blend of broad, solid courses in physiology, bacteriology, chemistry, biology, educational and social psychology, sociology, and cultural anthropology also provides the basic underpinnings needed for admittance to master's degree programs.

More and more openings also are becoming available for health education aides and assistants. Background requirements for such positions vary, and training usually takes place on the job. Nevertheless there is a considerable interest in developing a 2-year college program for health education assistants, leading to an associates of arts degree. As with the bachelor's degree program, the A.A. degree which is contemplated would prepare the student for a job immediately upon completion of training, as well as provide him with the basic schooling necessary for admittance to the next step of the career ladder.

Doctoral degrees —traditionally the highest academic degree available—are also offered in public health education. Many doctors in this specialty are needed now, and more are expected to be needed in the future, to meet rapidly growing demand for research and evaluation skills in health education and for teaching in institutions of higher learning around the world.

Students planning a career in this field should obtain information about the educational requirements of the schools in which they are interested. Some schools offering the master's degree also require a certain amount of practical work experience prior to professional education. Some agencies have special paid positions for career development in health education, and others offer exciting jobs for volunteers. Getting involved in a community health project, a neighborhood health center, or a hospital clinic is also good experience for the would-be health educator. Opportunities to develop skills in communication and public speaking, leadership techniques and group work, community organization, and educational methods should all be welcomed.

Like workers in many other health occupations, the health educator needs to enjoy people and work well with them. But something more is needed in terms of personal relationships. He must be able to play a variety of roles successfully according to the demands of the situation. At times he will work in a behind-the-scenes capacity, helping others start and carry out projects for which they properly get the credit. At times he must be able to help people caught in conflict understand each other's point of view while he maintains the trust and good-will of all parties concerned. And at times he must be the people's advocate until they come forward to speak for themselves.

Since the health educator works with people, his greatest satisfactions come from people—from seeing them take action which will lead to better individual and community health, from watching them develop their ability to solve their own problems, from sharing their sense of achievement in doing something they didn't know they could do.

EDUCATIONAL PROGRAMS IN HEALTH EDUCATION - ILLINOIS

Required Special Training:	Depends on the kind of employment desired; generally, a bachelor's degree in health education is the minimum requirement for employment. Teaching health occupations education or hygiene in the public secondary schools requires teacher certification.

Health Educator

Eastern Illinois University Charleston 61920	(bachelor's degree program)
George Williams College Downers Grove 60515	(bachelor's and master's degree programs)
Illinois State University Normal 61761	(bachelor's degree program)
Southern Illinois University Carbondale 62901	(bachelor's and master's degree programs)
Southern Illinois University Edwardsville 62025	(bachelor's degree program)
Department of Health and Safety Education University of Illinois Urbana 61801	(bachelor's degree programs in school health education, community health education, school safety education, and public safety education; master's degree programs in community health education and public health education; doctoral program in health education)
Western Illinois University	(bachelor's degree program; master's degree program in community health education and school health education)

HEALTH EDUCATOR - Further Information

Employment Prospects

There is a growing need for community (public) health educators in Illinois and elsewhere. New programs and services such as Comprehensive Health Planning, Health Systems Agencies, Health Maintenance Organizations, Regional Medical Programs, Neighborhood Health Centers, Model Cities Health Projects, Maternal and Infant Care Programs, Community Mental Health Centers, Migrant Health Projects, and Patient Education all have included health education positions in their staffing plans. In addition to these new program developments, a variety of special projects on smoking and health, drug abuse, alcholism, nutrition, family planning, safety, environmental pollution control, and consumer protection have required the services of community health educators. In 1975 the employment outlook in Illinois and nationally was good and is expected to remain so during the next decade.

Salary

Starting salaries for those with a bachelor's degree in community or public health education was approximately $9,000 per year. Persons with a master's degree in community health education received beginning salaries of $10,000 to $14,000. Experienced individuals earned from $15,000 to $27,000 annually.

Career Mobility

Persons interested in community health education should eventually plan to obtain a master's degree in public health (MPH) or a master of science degree in public health (MSPH), preferably from one of the academic institutions accredited by the American Public Health Association. The attainment of such a degree would enhance the individual's chance of obtaining a position of significant responsibility.

Further Reading

American Journal of Public Health, a journal published by the American Public Health Association, Inc.

Health Education Monographs, a journal for public and community health educators

Matthews, M. "Some Trends in Schools of Public Health," American Journal of Public Health, March 1975, pp. 291-292

Professional Organizations Where More Information May Be Obtained

American Public Health Association, Inc.
1015 Eighteenth Street, N.W.
Washington, D.C. 20036

Society for Public Health Education, Inc.
655 Sutter Street
San Francisco, California 94102

To Broaden Your Understanding

-visit and talk with a public health educator in your local, county, regional or state health department

-write to professional organizations and schools

HEALTH OCCUPATIONS TEACHER

The health occupations teacher is a trained allied health worker who instructs others in his/her profession. The duties of the health occupations teacher vary with the level of the educational program in which he is involved. In a high school health occupations program, the teaching done may be aimed at introducing students to a variety of health occupations and/or teaching the basic skills of some health professions. At the community college and college or university level, the health occupations teacher usually teaches knowledge and skills of his specific allied health profession. For example, a respiratory therapist would teach the theory of blood gases, as well as how to use machines to measure blood gases.

Depending on previous experience, education, and interests, a teacher of an allied health profession may choose to be a teacher or administrator in a high school, community college, college, or hospital setting.

Qualifications and Education

Allied health workers thinking of becoming health occupations teachers should be good practitioners and be enthusiastic about their health professions. In addition, they should have a strong desire to educate persons to becoming capable, empathic health team members. They should be responsible, cooperative, and able to establish good rapport with their students.

Educational requirements vary; a minimum of a bachelor's degree is necessary for teaching in high schools.

EDUCATIONAL PROGRAMS IN HEALTH OCCUPATIONS TEACHING - ILLINOIS

(Prerequisite: educational preparation as a health practitioner; experience desirable)

Required Special Training: a minimum of a bachelor's degree in health occupations education

Health Occupations Teacher

Governor's State University Park Forest South 60466	(offers bachelor's degree program in "allied health sciences education" -- prerequisite: 2 years of college; offers master's degree program in "allied health sciences education")
Department of Vocational and Technical Education University of Illinois Urbana 61801	(bachelor's degree program prepares allied health practitioners for teaching in secondary school health occupations programs or for teaching others to be practitioners in an allied health profession; master's degree program is for teaching others to be practitioners in allied health professions, or administering such an educational program, usually conducted in community colleges, universities, and hospitals)

HEALTH OCCUPATIONS TEACHER - Further Information

Employment Prospects

With the expansion of certification and accreditation requirements in the health professions and the need for qualified educators of these health professionals, the outlook for employment in 1974 was excellent.

Salary

In 1974 salaries varied greatly, depending on previous work experience, academic qualifications, and the nature of the employing institution.

Career Mobility

Competent, experienced health occupations teachers may rise to teaching positions in institutions which confer more prestige and higher salaries. Teachers may assume administrative responsibilities.

Further Reading

None

Professional Organizations Where More Information May Be Obtained

(there is no professional organization; interested students should write to the educational programs listed on the previous page)

To Broaden Your Understanding

-visit a health occupations teacher at a high school and a college

-get experience in some form of teaching activity to see if you have the interest and potential to become an effective teacher

-write to schools

Medical Illustrator

At one time, the work of the medical illustrator was limited to drawings and charts for medical journals, textbooks, monographs, and similar publications.

Today the medical illustrator's activities have a much broader scope. He interprets medical information by many kinds of visual presentations. He may use drawings, models, photography, exhibits, and television. He works with physicians, research scientists, educators, authors, and others to record facts and progress in many health fields.

Illustrators may work with specialists in subjects such as anatomy (structure of the body), pathology (study of diseases), and embryology (development of the body). Medical education relies heavily on the medical illustrator's work. The health professions depend on the illustrator to produce visual presentations for their own use and for the public. Scientific illustrations are now widely used in general magazines, professional journals, textbooks, exhibits, and pamphlets.

The medical illustrator's art combines minute accuracy with technical versatility. He works in many art media—water color, crayon, pen and ink, air brush, pencil, wax, plaster, plastics.

Medical artists either work in a medical environment (hospital, clinic, medical school, research institute) or they free lance. Some combine the two.

Qualifications and Education

Students intending to become medical illustrators should be science minded—with a creative interest in science and with the scientist's capacity for observation and study. They must have the ability to observe with accuracy, visualize with imagination, and persevere in application. Medical illustrating is not a career for everyone interested in art. It requires these special combinations of talent.

Only five universities in the nation offer programs in medical illustration--either at the bachelor's or master's degree level. They are between five and seven years in total length. The first years of these programs stress the biological sciences and art; the final years include human anatomy, physiology, pathology, and instruction in the media and techniques used in medical illustration.

EDUCATIONAL PROGRAMS IN MEDICAL ILLUSTRATION - ILLINOIS

(Prerequisite: High school diploma or its equivalent)

Required Special Training:	Either a) 5-year college program, of which the final 2 years or more are devoted to medical illustration, or b) a bachelor's degree in some field plus a master's degree in medical illustration of approximately 2 years in length

Medical Illustrator

School of Associated Medical Sciences
University of Illinois College of Medicine
Chicago 60612

(a 5-year program)

MEDICAL ILLUSTRATION - Further Information

Employment Prospects

In 1974, employment prospects for medical illustrators were good. Employment opportunities in medical art tended to be in the major urban areas.

Salary

In 1974 beginning salaries varied greatly, but yearly incomes of $10,000-$14,000 were common. The salaries of experienced persons varied greatly as well. The highest salaries were earned by freelance illustrators; top incomes were $50,000-$100,000.

Career Mobility

Experienced medical illustrators may teach or administer in a university medical art program or perform a variety of illustration assignments in a hospital setting or veterinary clinic. Highly skilled persons may limit their work to freelance assignments; pharmaceutical companies pay the highest salaries for the services of freelance artists. For medical illustrators who wish to work in a non-medical field, their background is such that they can seek employment in technical and graphic illustration.

Further Reading

Journal of Biocommunication, a journal published by the Association of Medical Illustrators and the Health Sciences Communications Association

Nakamura, Julia V. and Massy M., Your Future in Medical Illustration: Art and Photography, Richards Rosen Press, New York, 1971

Odgers, Ruth F. and Wenberg, Burness G., editors, Introduction to Health Professions, The C.V. Mosby Company, St. Louis, 1972, pp. 167-1[illegible]2

Professional Organization Where More Information May Be Obtained

Association of Medical Illustrators
6650 Northwest Highway
Chicago 60631

To Broaden Your Understanding

-talk to a medical illustrator about his/her work (contact a large hospital, medical center, or university to find the name of a nearby illustrator)

-write to the professional organization and the school

Medical Librarian

Year after year a vast store of knowledge accumulates in the many branches of medicine, in medical research, and in scientific research related to medicine. This knowledge is recorded in journals and other periodicals, text books, monographs, and other publications.

These publications, coming from every part of the world, are collected in the medical library where they are made available for professional people needing them for various purposes. What is discussed in Bombay must be made available as quickly as possible to the health professionals and students in London and New York.

Doctors, nurses, dentists, pharmacists, therapists of various kinds, technicians, and health profession students may come to the library for texts or monographs on a subject of special interest. Or they may search the journals for background material or for research reports on the latest developments in their field.

The medical and scientific journals would also be used by research scientists or research students, since these are the main source of information on what has already been done, and what is currently being done in the field in which they are working.

Ordering, classifying, indexing, and keeping files and loan records of the materials in the library is basic, but it is only the beginning of the job.

Readers and researchers frequently call upon the specialized skills of the librarian to track down information on a particular subject. The material may be in obscure documents or scattered in many places, requiring a bit of detective work to find it. If the document is in another language, the librarian may be called upon to obtain a translation. Frequently, the librarian is called upon to compile bibliographies or provide a comprehensive review or abstract on a particular subject.

Aside from serving in person, the librarian also responds to mail or phone inquiries. Wherever the question comes from, success in finding the answer depends largely on the librarian's skill. Librarians may have only very general knowledge of medicine, but must know how and where to locate every type of information or material on short notice.

Medical librarians work in such places as schools of medicine, nursing, dentistry, and pharmacy; hospitals; research institutes; pharmaceutical houses and similar industries; health departments; professional societies; and voluntary health agencies.

In a hospital, the service offered by the medical library will depend on many factors: whether the hospital conducts research and training, the categories of illness treated, and others. In some hospitals, there are separate libraries: the medical library, the nursing school library (if there is a nursing school there), and the patients' library. More and more, however, these are being grouped together under the direction of one chief librarian, with assistants in charge of the separate services.

In the school of nursing, the librarian is considered a member of the faculty. She is concerned with developing the school's curriculum, meeting the reference requests of graduate and student nurses, and providing both groups with recreational reading.

The librarian also plays an important role in the hospital rehabilitation service.

The librarian serving patients will provide book cart services, develop programs of interest for patients who are up and about, and visit new patients to learn about their reading interests.

Qualifications and Education

To be happy and successful as a medical librarian, the prospective student needs to have a genuine respect for the printed word—for the publications that record the forward march of science. But the librarian deals with people as much as with books. Friendliness and the capacity to understand and share other people's interests are important. A sense of humor, a well-developed curiosity, and good imagination are great assets.

The bachelor of arts or bachelor of science degree is required for entrance to any of the 53 schools of librarianship in the United States accredited by the American Library Association.

A program taking 1 calendar year beyond the bachelor degree leads to a master of science or a master of arts degree in librarianship. Since admission requirements of the individual schools vary slightly, the candidate is advised to write to the school for specific information in this area. Many schools offer postgraduate programs which may lead to a doctor of philosophy or doctor of library science degree.

Good reading knowledge of at least one foreign language is necessary and a fair degree of fluency in several is helpful.

(Prerequisite: bachelor's degree, preferably with an emphasis in the sciences)

Required Special Training: A 1-year program in medical librarianship after which a master's degree is awarded.

Medical Librarian

Rosary College
Chicago 60305

University of Chicago
Chicago 60637

University of Illinois
Urbana 61801

Employment Prospects

In 1974 the number of job openings in medical librarianship was smaller than in previous years. However, graduates of Illinois educational programs in medical library science were able to find positions. In the coming years with increased federal support for health care, it is expected that there will be more employment opportunities for medical librarians.

Salary

In 1974 beginning annual salaries for medical librarians working in medical school libraries and in hospitals were $9,000 to $10,000; in governmental agencies, $11,000; and in pharmaceutical companies, $12,000. Experienced librarians with increased responsibilities earned salaries of $15,000-$30,000.

Career Mobility

Many medical libraries employ a number of medical librarians at several levels of responsibility. Medical librarians wishing to do related work can move into other areas of librarianship or into the fields of medical communication or medical publishing. Persons outside the medical library profession and who desire to enter the field will find a bachelor's degree background in the sciences most helpful.

Further Reading

Science Research Associates, Inc. Medical Librarians, Occupational Brief No. 218, Chicago, 1973

Professional Organization Where More Information May Be Obtained

American Library Association
50 East Huron Street
Chicago, Illinois 60611

Medical Library Association, Inc.
919 North Michigan Avenue
Chicago, Illinois 60611

To Broaden Your Understanding

-talk to a librarian about his/her work
-visit the medical library of a college of medicine, pharmaceutical company, or hospital
-write to schools and professional organizations

Medical Record Administrator

It is the responsibility of the medical record administrator to see to it that for each patient in the hospital a complete, continuous, and accurate record is kept from the time of his admission to the time of discharge.

A great deal of material must be gathered and checked: patient's medical history, results of the physical examination, diagnosis, laboratory findings, medication, temperature readings, progress, notes, and others.

From this record all hospital professionals involved in the care of the patient can tell at a glance what treatment has been carried out and what treatment is being planned.

When a patient is discharged from a hospital, his medical record is sent to the hospital's medical record department. There it is checked for accuracy and put in files for future use in the event the patient should return.

To maintain the accuracy of the medical record, the medical record administrator makes sure that uniform medical terminology is used by the various members of the staff who make entries in it.

The medical record administrator is responsible not only for the content of each record but also for maintenance of all of the records in an efficient medical records library. She follows a recognized classification system in coding diseases, operations, and other factors. She indexes information from the records, sets up catalogs, and controls the traffic in case records.

The medical record administrator also prepares medical and statistical reports upon request. Most hospital administrators request daily, weekly, and monthly reports from the medical record department. These reports are used in directing operations and formulating policy.

At present only 4,000 registered medical record administrators are employed in this field. About 10,000 facilities need their services. Job opportunities exist in hospitals, clinics, neighborhood health centers, medical research organizations, health departments, nursing homes, and government agencies. There are also teaching positions in accredited schools for medical record technicians.

Qualifications and Education

Important qualities in a medical record administrator are orderliness, accuracy, and precision. Since the duties involve working with very busy physicians and occasionally with worried patients and their families, poise and patience are essential traits. The obligation to keep medical records confidential requires a strong sense of responsibility and discretion.

A minimum of 4 years of study following high school is required to become a professional registered medical administrator. There are alternate programs of study. One is a 4-year program in a college or university giving a bachelor degree in medical record administration or medical record science. The other is a 12-month course in a hospital certificate school following 4 years of college study with specific background in the biological sciences. On completion of either of these programs the graduate is eligible to take the national registration examination for registered record administrator, signifying professional status in the medical record field.

EDUCATIONAL PROGRAMS IN MEDICAL RECORDS - ILLINOIS

Medical Record Administrator

Required Special Training: Either a) bachelor's degree in medical record administration or b) 1-year certificate program in medical record administration for those already having a bachelor's degree in another field. (There are no certificate programs in Illinois)

School of Associated Medical Sciences University of Illinois at the Medical Center Chicago 60612	(Prerequisite: 3 years of college) Program is 12 months in length after which bachelor's degree is awarded
Illinois State University Normal 61761	(Prerequisite: 2 years of college) Program is 2 years in length after which bachelor's degree is awarded

Medical Record Technician

Required Special Training: Either a) 2-year degree program in medical record technology or b) 1-year correspondence course from the American Medical Record Association or c) 1-year hospital diploma program in medical record technology (there are no 1-year hospital programs in Illinois).

Belleville Area College
Belleville 62221

Central YMCA Community College
Chicago 60606

Illinois Central College
East Peoria 61611

College of Lake County
Grayslake 60030

Moraine Valley Community College
Palos Hills 60465

Oakton Community College
Morton Grove 60053

Thornton Community College
South Holland 60473

Employment Prospects

In 1974 there were approximately 300 medical record administrators in Illinois. The demand for administrators was quite strong and employment prospects over the next ten years appeared good.

Salary

In 1974, starting salaries for inexperienced medical record administrators were about $9,000 to $10,000 in large Illinois cities and somewhat less in smaller communities. Experienced administrators earned considerably more than beginning ones.

Career Mobility

Medical record administrators who wish to consider other health-related work may enter post-graduate college programs in education, public health, health education, or business administration and after that find employment as a medical record educator or as a medical record administrator in government or other organizations. They may find positions as instructors in medical record technician programs in community colleges or medical record administration programs in universities. Frequently, they serve as part-time consultants to the record departments of smaller hospitals and nursing homes.

Further Reading

Medical Record News, a journal published by the American Medical Record Association

Odgers, Ruth F., and Wenberg, Burness G., editors, Introduction to the Health Professions, 1972, p. 103-108

Professional Organization Where More Information May be Obtained

American Medical Record Association
875 North Michigan Avenue, Suite 1850
Chicago, Illinois 60611

To Broaden Your Understanding

-visit a medical record department in a hospital and talk to the people working there about their work
-write to schools and the professional organization

Medical Record Technician

The medical record technician works in the medical record department of a hospital, nursing home, or clinic. Like the medical record administrator who supervises her/him, the medical record technician must maintain accurate records of patients. This information is needed by patients, physicians, insurance companies, health care facilities, and in cases of federal health programs like Medicare, the federal government.

Medical record technicians in smaller health care facilities will probably perform a wide range of tasks and those in larger hospitals may specialize in only two or three aspects of medical record work. Among the duties the medical record technician may perform are: filing medical records, reviewing medical records for completeness and accuracy, typing medical reports, compiling statistics, and supplying health information to other persons or agencies.

Qualifications and Education

Since the medical record technician's work consists largely of keeping accurate records, she/he must be able to handle large amounts of information without often making mistakes. Such office and clerical tasks require patience. In order to be reasonably satisfied with medical records work, one should enjoy and have ability in performing clerical tasks involving considerable detail and requiring a high degree of accuracy.

There are three educational routes to becoming a M.R.T. The most common method is completion of a two-year program in a community college. Less common, and probably limiting chances for advancement in the field, is the one-year course offered by a few hospitals and community colleges (there are no such programs in Illinois). Finally, the American Medical Record Association offers a correspondence course enabling the high school graduate to become a medical record technician.

MEDICAL RECORD TECHNICIAN - Further Information

Employment Prospects

In 1974 there were about 400 medical record technicians in Illinois. Technicians were employed as heads of medical record departments in smaller hospitals and clinics or worked under the direction of medical record administrators in larger medical record departments. In 1974, the demand for technicians was quite strong and job prospects for the next ten years appeared good.

Salary

In 1974, beginning salaries for inexperienced medical record technicians in Illinois were about $7,000 to $9,000. Experienced technicians earned considerably more than beginners working in the same medical record department. Generally, salaries were lower than this in small towns and rural areas.

Career Mobility

Medical record technicians may assume greater responsibility and receive salary increases without further education. Those desiring to be medical record administrators may return to college to finish a bachelor's degree in medical records or a bachelor's degree in another field and then enroll in a one-year hospital-based certificate program in medical record administration. Some hospitals provide financial assistance to their medical record technicians who wish to further their education.

In 1974, there were no proficiency or equivalency examinations which could assist the medical records worker in her/his career advancement. Such examinations may be a reality in the future to help the careers of those who wish to receive the greatest possible credit for their ability and related experience.

Further Reading

Medical Record News, a journal published by the American Medical Record Association

Kinsinger, Robert E., editor, Health Technicians, J.G. Ferguson Publishing Company, Chicago, 1970, pp. 204-213

Professional Organization Where More Information May be Obtained

American Medical Record Association
875 North Michigan Avenue, Suite 1850
Chicago, Illinois 60611

To Broaden Your Understanding

- visit a medical record department in a hospital and talk to the people working there about their work
- write to schools and the professional organization

MEDICAL TRANSCRIPTIONIST

The medical transcriptionist types written and recorded medical records. The transcriptionist works with the medical record administrator and medical record technician in the preparation and maintenance of accurate patient records.

Medical transcriptionists work in hospitals, clinics, and nursing homes. The records they transcribe are used for emergency and follow-up treatment by physicians and other health care personnel, by insurance companies, and by other agencies. The transcriptionist must type medical dictation, understand medical terms, and know how to interpret medical reports.

Qualifications and Education

Accuracy and speed in typing technical and often complex medical information are necessary for effective medical transcription.

Many transcriptionists begin work as medical transcriptionists with no formal training in the typing of medical records. They receive on-the-job experience in learning the necessary terminology. Alternate ways of training to become a transcriptionist are the 2-month correspondence course offered by the American Medical Record Association or a 1-year community college program in medical transcription.

Required Special Training:	Either a) related work experience or b) on-the-job training or c) 2-month long correspondence course from the American Medical Record Association or d) 1-year community college program in medical transcription.

Medical Transcriptionist

William Rainey Harper College
Palatine 60067

Oakton Community College
Morton Grove 60053

MEDICAL TRANSCRIPTIONIST - Further Information

Employment Prospects

In 1974 there was a great need for transcriptionists, especially in the Chicago area. Employment prospects in the next ten years appeared good.

Salary

In 1974 salaries of inexperienced transcriptionists working in Illinois ranged from $5,000 to $7,000. As a rule, salaries were considerably higher in Chicago and other cities than in smaller towns and rural areas.

Career Mobility

For the most part, medical transcriptionists do not seek to enter other health fields. Occasionally, transcriptionists desire to become medical record technicians. The three possible routes to becoming a medical record technician are described in the section on educational programs in medical records.

Further Reading

Medical Records News, a journal published by the American Medical Record Association

Odgers, Ruth F., and Wenberg, Burness G., editors, Introduction to the Health Professions, 1972, pp. 103-108

Professional Organization Where More Information May be Obtained

American Medical Record Association
875 North Michigan Avenue, Suite 1850
Chicago, Illinois 60611

To Broaden Your Understanding

-visit a medical record department in a hospital and talk to the people working there about their work
-write to schools and professional organizations

Physical Therapist

The physical therapist is a professionally trained member of the health team, including physicians, nurses, and other specialists. His job is to help patients overcome their disability through therapeutic exercise, massage, and the use of heat and cold. To carry out his tasks, he must have detailed knowledge of human anatomy and physiology and know what steps may be taken to correct disease and injury.

For example, in the case of a child with a birth defect, the physician calls upon the physical therapist to perform a muscle evaluation in order to determine the extent of the damage. On the basis of the muscle test, plans are made for the kind of physical therapy the child needs. The physical therapist then carries out the plan of treatment.

In working with this child, the physical therapist gives the exercises that bring weakened muscles back toward normalcy. Treatment may include water exercises in warm baths or pools, hot packs, electricity (special currents that stimulate paralyzed muscles), ultraviolet rays, and massage. If the child must be fitted with braces or crutches, the therapist's task is to teach him to walk with the aid of these appliances.

Treatment can be more effective, and progress faster, if the patient and his family understand the purpose and plan and know just how they can play their part. Physical therapy services include instructing patients and their families in how to carry on prescribed treatment at home. They may need specific instruction in the techniques of muscle reeducation, or in the care and use of braces or prosthetic appliances.

In meeting a patient for the first time, the physical therapist, like the physician, keeps in mind the importance of preparing him emotionally for what is to come. He is sensitive to the problems of the patient, made vulnerable by his disability or disease.

Because the treatment may be prolonged and tedious, the full cooperation of the patient will be required. As a first step, therefore, the physical therapist familiarizes himself with the patient's personal background as well as his medical history, and makes an effort to gain his confidence and cooperation. The therapist-patient relationship often determines success or failure in involving the patient in his own treatment. This is especially true of children, and here, of course, the therapist must do his best to help the parents as well as the child to understand the treatment.

A wide choice of employment opportunities exists. A great many therapists hold positions in general hospitals and in specialized institutions such as those for children, veterans, and people with orthopedic conditions or chronic diseases. Many opportunities also can be found in rehabilitation centers throughout the country, where patients come for the care and training that will enable them to gain confidence and independence.

An increasing number of large industrial firms have physical therapy departments in the medical clinics serving their plants and offices. Also, the need is growing for physical therapists in schools for crippled children. Or a physical therapist may join the Armed Forces with an officer's commission and serve in an Army, Navy, or Air Force hospital. Physical therapists also are employed in the hospitals of the U.S. Public Health Service. (The availability of part-time employment should be an attraction for women with domestic responsibilities.) Physical therapists are also needed in teaching and in research.

Qualifications and Education

Adaptability, emotional stability, tact, an outgoing personality and a pleasant appearance are "musts" in this profession. Physical therapy also takes a great deal of patience and the ability to work toward a long-range goal, even though the progress may sometimes seem slow. Manual dexterity is important. At least average weight and height are desirable, but strength as such is subordinate to good health.

There are three basic plans of education for physical therapy: four-year bachelor's degree courses; 12 months' certificate courses for students who hold bachelor's degrees (offered in 15 schools); graduate training leading to a master's degree for students with a bachelor's degree and the requisite background.

In 1974, 66 universities offered fully accredited physical therapy programs. Essentially, the course is divided into several areas: A liberal arts program emphasizes the humanities and social studies. Study of the biological sciences includes anatomy, physiology, and pathology. Major emphasis in physical sciences is on chemistry and physics, including the fundamental principles of mechanics, thermodynamics, light, sound, and electricity. Specialization courses provide the fundamental knowledge and skills required to treat patients. Finally, supervised clinical practice completes the course.

Required Special Training: A number of Illinois colleges and universities offer two or three years of preliminary (pre-professional) course work in physical therapy. Following this course work, and depending on the particular program, approximately 1 to 2 years in a professional curriculum in physcial therapy are required, after which a bachelor's degree in physical therapy is awarded. (Usually there is intense competition for acceptance into the professional curriculum.) In some programs transfer students in the professional curriculum are awarded a certificate in physical therapy upon completion of that program and are also granted a bachelor's degree from the college from which they transferred.

Physical Therapist

345 E. Superior Street, Room 1323
Northwestern University
Chicago 60611

Northwestern offers three kinds of programs:

a) Certificate Program: this program is designated for two classifications of students:
   1. for those with a bachelor's degree in a field other than physical therapy: 15-month program in physical therapy after which a Certificate in physical therapy is awarded
   2. for those with 3 years of college whose previously-attended college will grant a bachelor's degree upon the student's completion of a 15-month program in physical therapy at Northwestern. Upon completion of the program, Northwestern awards a Certificate in physical therapy.

b) Bachelor's degree program: for students with 3 years of college: 15-month program in physical therapy after which a bachelor's degree in physical therapy is awarded by Northwestern.

c) Master's degree program: for students with a bachelor's degree in physical therapy and 2 years of experience as a physical therapist:
1 1/2 to 2 years or more graduate level program in physical therapy, after which a master's degree in physical therapy is awarded.

Physical Therapist

School of Associated Medical Sciences
University of Illinois at the Medical Center
Chicago 60612

(Prerequisite: 2 years of college)
(Program is 2 years in length after which a bachelor's degree is awarded)

Chicago Medical School
University of Health Sciences
Chicago 60612

(Prerequisite: 2 years of college)
(Program is 2 years in length after which a bachelor's degree is awarded)

Note: The U.S. Army has a physical therapy program which is conducted out-of-state. For more information, consult "Military Training Programs in Health Fields" in section 1-B.

PHYSICAL THERAPIST - Further Information

Employment Prospects

In 1974 employment prospects for physical therapists were generally good in Illinois. There were opportunities in Chicago but many metropolitan centers around the country had only limited job openings. Nationally increased recognition of the importance of rehabilitation and the growth of nursing homes should result in a substantial rise in demand for physical therapists during the next ten years.

Salary

In 1974, physical therapists with no prior experience generally received from $8,500-$10,000 per year in Illinois. Beginning salaries in Illinois hospitals averaged $825 per month in mid-1973 and for all physical therapists, $930 per month. In 1974 salaries for physical therapy supervisors, teachers, and consultants ranged from $14,000-$20,000 yearly. Top specialists and administrators received annual salaries of from $15,000-$25,000.

Career Mobility

With experience physical therapists may assume supervisory and administrative responsibilities. Graduate education is ofter desirable for therapists interested in consulting to nursing homes and other institutions, the education of physical therapists and physical therapy assistants, and administrative posts. In recent years, some physical therapists have established their own private practices. Except in cases where individual colleges will arrange for special examinations, there are no proficiency or equivalency examinations available to physical therapy assistants wishing to become physical therapists. (Such examinations, which are available in a few health fields, test for competence in the professional course work and/or knowledge gained through related work, and can result in shortening the required training period.)

Further Reading

Physical Therapy, a journal published by the American Physical Therapy Association

Odgers, Ruth F., and Wenberg, Burness G., editors, Introductions to Health Professions, the C.V. Mosby Company, St. Louis, 1972, pp. 71-78

Professional Organization Where More Information May Be Obtained

American Physical Therapy Association
1156 15th Street, N.W.
Washington, D.C. 20005

To Broaden Your Understanding

- do volunteer or paid work in the physical therapy department of a hospital or rehabilitation center
- gain some kind of work experience in a health care institution
- talk with a physical therapist about his/her work
- write to schools and the professional organization

PHYSICAL THERAPY ASSISTANT

The physical therapy assistant is a skilled technical health worker who assists the physical therapist in patient treatment programs and in other activities necessary to the operation of a physical therapy department. Specifically, she/he helps administer treatment to patients with muscle, nerve, joint, or bone diseases or injuries. The physical therapy assistant uses physical exercises, machines, massage, applications of heat, cold, water, light, and electricity as she/he works to restore as completely as possible the normal physical and mental functions of the patient after disease or injury. Physical therapy assistants may also help patients adjust to the use of splints, braces, crutches, wheelchairs, and artificial limbs. They care for patients and help move those who cannot walk from one place to another. The physical therapy assistant may also work with the physical therapist in performing tests and evaluations to determine the progress that has been made in therapy. In addition, the physical therapy assistant schedules patients, orders supplies, and performs other office duties.

Physical therapy assistants work in a variety of settings. The largest number work in hospitals. Others are employed in rehabilitation centers, industry, and schools for crippled children.

Qualifications and Education

Because of the large number of people with whom she/he comes in contact with, the physical therapy assistant must like and possess the ability to get along well with other people. An outgoing personality is desirable and the ability to instill in others enthusiasm and confidence also is needed. The physical therapy assistant must be very understanding and be able to offer support to patients while they are being treated. The assistant should show appreciation for even the smallest amount of progress made by patients and should be able to build upon it. She/he should also enjoy physical activity.

Community college physical therapy assistant programs require a high school diploma or its equivalent to be eligible to enroll. The program itself is two years, after which the associate degree is awarded.

EDUCATIONAL PROGRAMS IN PHYSICAL THERAPY ASSISTING - ILLINOIS

(Prerequisite: High school diploma or its equivalent)

Required Special Training: 2-year associate degree program in physical therapy assisting.

Physical Therapy Assistant

Belleville Area College
Belleville 62221

Central YMCA Community College
Chicago 60606

Illinois Central College
East Peoria 61611

Morton College
Cicero 60650

Oakton Community College
Morton Grove 60053

Southern Illinois University
Carbondale 62903

PHYSICAL THERAPY ASSISTANT - Further Information

Employment Prospects

In 1974 Illinois employment prospects for physical therapy assistants were reasonably good for those who were willing to search for work beyond their community of residence. As with some other health fields, there were cities where the hospitals were not hiring physical therapy assistants; on the other hand, some had been unable to attract assistants. In the coming decade, employment prospects were expected to remain relatively good.

Salary

Detailed salary information for Illinois was not available. A check with several hospitals employing physical therapy assistants revealed beginning salaries for inexperienced persons to be in the neighborhood of $6,500 per year. Salaries rose slightly for experienced assistants.

Career Mobility

Physical therapy assistants can assume greater responsibility after having shown their capabilities. The amount of responsibility they might be granted would also depend on the willingness of his/her superiors to delegate authority. Occasionally a physical therapy assistant wishes to become a physical therapist, which requires a bachelor's degree. In most cases, there is strong competition for admission to bachelor's degree programs. If admitted, the physical therapy assistant often may apply a considerable amount of his prior college course work toward meeting the requirements of the bachelor's degree. Except in cases where individual colleges will arrange for special examinations, there are no proficiency or equivalency examinations available to physical therapy assistants wishing to become physical therapists. (Such examinations, which are available in a few health fields, test for competence in the professional course work and/or knowledge gained through related work, and can result in shortening the required training period.)

Further Reading

Physical Therapy, a journal published by the American Physical Therapy Association

Kinsinger, Robert E., editor, Health Technicians, J.G. Ferguson Publishing Company, Chicago, 1970, pp. 93-100

Professional Organization Where More Information May Be Obtained

American Physical Therapy Association
1156 15th Street, N.W.
Washington, D.C. 20005

To Broaden Your Understanding

- do volunteer or paid work in the physical therapy department of a hospital or rehabilitation center
- gain some kind of work experience in a health care institution
- talk with a physical therapist and a physical therapy assistant about their work
- write to schools and the professional organization

Occupational Therapist

When the patient is referred by the physician, the therapist makes an evaluation to determine the current level of functioning and to learn more about the patient as a person—his likes and dislikes, hopes and fears, experiences and expectations. After making the evaluation, the therapist can decide which activity would appeal to the patient and have most value for him. The extent and speed of progress is very much dependent on the therapist's professional judgment.

Incapacitated people often resist help because of resentment about their disability and for other psychological reasons. This calls for insight, understanding, and empathy, because the first concern of the therapist is to engage the patient's interest.

Types of Therapy

Many factors enter into the decision as to the type of therapy used: the nature of the patient's disability, the patient's physical and emotional condition, temperament, short-term and long-term goals of the therapy, and so forth.

The kinds of challenges presented are illustrated by the following examples:

Would learning to type help develop hand coordination for the injured airplane mechanic? Once the therapist has gained his interest, he responds eagerly, and the use of a practical skill helps him improve and return to work earlier.

Would weaving be the most beneficial activity for the woman with arthritic fingers? If this would help her to achieve a sense of progress in the doing, and at the same time benefit her therapeutically, the answer would be "yes."

How can a housewife in a wheelchair who has lost the use of one hand manage at home? She is learning how to work with a paring board that fits over the edge of the table upon which a potato has been impaled on a nail. This adapted device makes it easier for her to prepare vegetables without assistance.

How will a little girl develop enough coordination in her movements to eat alone? She needs first to learn to let eyes and hands work together, by tossing a beanbag while sitting at a cutout table. By performing this activity she will eventually develop the ability to feed herself.

Beside the ability to teach and to communicate with handicapped people, and a general background of knowledge in the basic science and medicine, the occupational therapist needs specific knowledge in the various working skills used in therapy. Among these working skills are leatherwork, jewelry making, ceramics, woodwork, metalwork, textile crafts, and printing. He also needs to know the skills of daily living and simple homemaking.

The therapist may also organize educational activities, such as the study of language or creative writing, or he may organize dramatic groups. For activities such as these, he will generally call upon the assistance of a professional in the particular field. Though he cannot himself be an expert in all these activities, the occupational therapist must know enough about them to understand their therapeutic value, and to set them into motion.

Trained men and women volunteers often play an important part in occupational therapy services. These unpaid but skilled workers aid the therapist and, in turn, the patients, by lending their abilities and special talents. The volunteers work under the direction of the occupational therapist.

Often the physical or mental disability is so severe as to make it no longer possible for the patient to perform in his former occupation or profession. In such cases, the therapist may discover some other skill or talent which the patient can develop and use, and this becomes the goal of the therapy. This can be, for the therapist, a very rewarding experience.

One of the occupational therapist's regular duties is to prepare reports for the information of his professional teammates. A report may cover, for example, an account of the progress of a physically disabled patient who has been assigned tasks of increasing difficulty. Or it may cover the progress being made by crippled children in developing muscle coordination through play with therapeutic toys.

Qualifications and Education

Occupational therapy requires 4 years of college training leading to the degree of bachelor of science. There are some minor differences in these courses and it is a good thing to look into them in advance. However, most colleges and universities offering courses in occupational therapy are approved by the Council on Medical Education and Hospitals of the American Medical Association, in collaboration with the American Occupational Therapy Association.

In addition to the 4 years of academic preparation, a clinical training period is required in order to qualify for professional registration. In most schools, this clinical experience takes 6 to 9 months.

For those who already have a degree before enrolling in a program of occupational therapy, there is an advanced-standing course of 18 to 22 months, divided between academic and clinical work. There is also a master's degree program offered in several universities.

Although supervised clinical experience is part of all the approved programs, compensation during this period varies widely. Some institutions offer no compensation at all, others provide maintenance, and still others give a cash stipend in lieu of maintenance.

The college preparation for occupational therapy emphasizes physical and behavioral sciences, such as anatomy, physiology, neurology, psychology, and sociology. Other subjects would include manual and creative skills, educational subjects, and recreational activities.

The occupational therapist works with people of all kinds and all ages. Their temperaments and personalities are likely to be as varied as their illnesses and handicaps. To gain their confidence, he should have a warm, friendly personality that inspires both trust and respect. Together with these qualities, he should also have ingenuity and imagination in adapting activities to individual needs. The success of his work often depends in large part on his skill in bringing people and activities together in the right combination.

He also needs to be skilled, patient, and resourceful in teaching, since the people he works with present unusual and difficult learning problems. This occupation presents an excellent opportunity to combine an interest in teaching with an interest in helping people in distress and extreme need.

EDUCATIONAL PROGRAMS IN OCCUPATIONAL THERAPY - ILLINOIS

Required Special Training: Either a) a bachelor's degree in occupational therapy plus a clinical internship of at least six months, or b) for those with a bachelor's degree in a field other than occupational therapy, a post-baccalaureate program leading to a master's degree in occupational therapy or a certificate of proficiency in occupational therapy (there are no master's degree or certificate programs in Illinois).

Occupational Therapist

School of Associated Medical Sciences
University of Illinois College of Medicine
Chicago 60612

(Program consists of 3 years at the University of Illinois Urbana campus and 16 months at the College of Medicine campus in Chicago — after which a bachelor's degree is awarded)

Curriculum in Occupational Therapy
School of Associated Medical Sciences
Region 3-B
University of Illinois College of Medicine
Chicago 60612

(Program is offered on the University of Illinois Urbana-Champaign campus, but is administered through the College of Medicine, Chicago)

OCCUPATIONAL THERAPIST - Further Information

Employment Prospects

Occupational therapists are employed in general hospitals, mental health facilities, rehabilitation centers, nursing homes, and schools. More recently occupational therapists have begun to work in industry. Some serve as consultants; some have established private practices. In 1975 employment prospects were good. The U.S. Department of Labor has predicted there will be an average of 1100 annual job openings over the next ten years.

Salary

In 1975 beginning salaries in Illinois ranged from $9,800 to $11,000 yearly. Therapists with supervisory responsibilities earned from $10,500 to $14,000; those who headed occupational therapy departments received from $15,000 - $22,000.

Career Mobility

With experience occupational therapists may assume supervisory and administrative respinsibilities. Health care facilities and other agencies require occupational therapists to serve as consultants as they develop new occupational therapy services. Persons with college degrees in areas other than occupational therapy may become occupational therapists after completion of certificate or master's degree programs (mentioned on page 11-C-3). Occupational therapy assistants may become registered occupational therapists by passing the equivalency examination offered by the American Occupational Therapy Association. However, there are no proficiency examinations available to those wishing to demonstrate their mastery of specific professional course work. For those interested in teaching, administration, and research in this field, master's and doctoral degrees in education, administration and related areas are desirable academic qualifications.

Further Reading

American Journal of Occupational Therapy, a journal published by the American Occupational Therapy Association

Odgers, Ruth F., and Wenberg, Burness G., editors, Introductions to Health Professions, the C.V. Mosby Company, St. Louis, 1972, pp. 119-26

Professional Organization Where More Information May Be Obtained

American Occupational Therapy Association
6000 Executive Boulevard
Suite 200
Rockville, Maryland 20852

To Broaden Your Understanding

- do volunteer or paid work in the occupational therapy department of a hospital or health care facility
- gain some kind of work experience in a health care institution
- talk with an occupational therapist about his/her work.
- write to schools and the professional organization

OCCUPATIONAL THERAPY ASSISTANT

There are two levels of trained personnel in occupational therapy -- the occupational therapist and the certified occupational therapy assistant (COTA). As with the other therapies, often it is the assistant who carries out programs and activities on a one-to-one basis with patients. The activities that the COTA teaches and directs may include creative arts such as clay modeling, leatherwork, macrame, painting, woodworking, and weaving, or such skills as typing, keypunching, and the operation of power tools.

Although the COTA works under the general direction of the registered occupational therapist, he/she can exercise a high degree of initiative, responsibility, and independent action. Besides planning occupational programs (usually in cooperation with the registered occupational therapist), teaching, and supervising patients, one of the assistant's main responsibilities is observing patients and reporting those observations back to the occupational therapist in charge. In this manner, the COTA and the occupational therapist cooperate in evaluating a patient's therapeutic progress. Often an assistant may even be given supervisory and/or administrative responsibilities, particularly if the occupational therapy department is small and employs a registered therapist on a part-time or consultive basis only.

Certified occupational therapy assistants are found working in all settings where registered occupational therapists are employed, including hospitals, clinics, rehabilitation centers, veterans' hospitals, nursing homes, extended care facilities, schools for handicapped children, psychiatric facilities, and community mental health centers.

Qualifications and Education

Although education and training will prepare students to work effectively with patients having physical and mental disabilities, it is helpful if the student has a strong concern for these people and a desire to help them help themselves. Emotional maturity, a pleasant personality, and an ability to communicate with others and establish effective interpersonal relationships can contribute to success and fulfillment as an occupational therapy assistant. Likewise the ability to remain optimistic and supportive even in the face of discouraging situations will contribute to the assistant's job satisfaction and the patient's welfare.

Programs for the preparation of occupational therapy assistant vary in length: community college associate degree programs are 2 years in length. A few community college programs are only 1 year, and hospital-based programs may be only 20 weeks long. Areas of instruction include physical and mental illnesses, psychology, arts, crafts, and the purpose and philosophy of occupational therapy.

EDUCATIONAL PROGRAMS IN OCCUPATIONAL THERAPY ASSISTING - ILLINOIS

(Prerequisite: high school diploma or its equivalent)

Required Special Training: Either a) a hospital-based occupational therapy assistant program of at least 20 weeks (there are no hospital-based programs in Illinois), or b) a 1-year community college occupational therapy assistant program, or c) a 2-year associate degree community college occupational therapy assistant program.

Occupational Therapy Assistant

Illinois Central College
East Peoria 61611 (2-year program only)

Thornton Community College
South Holland 60473 (both 1 and 2-year programs)

Employment Prospects

In 1975 employment prospects for occupational therapy assistants were generally good in Illinois and were expected to continue to remain so in coming years.

Salary

Detailed salary information was not available. In 1975, Illinois salaries ranged from $8,000 to $11,000 per year.

Career Mobility

Occupational therapy assistants can assume greater responsibility after demonstrating their competence. The amount of responsibility they might be given may also depend on the willingness of their superiors to delegate authority to them. Occasionally an occupational therapy assistant wishes to become an occupational therapist, which usually requires a bachelor's degree. There is usually competition for entry into bachelor's degree programs. If admitted the occupational therapy assistant may be able to apply some of his prior college course work toward meeting the requirements of the bachelor's degree. There are no proficiency examinations available to those wishing to test out of specific professional level courses. However, the American Occupational Therapy Association offers an equivalency examination to occupational therapy assistants; passing of this examination will result in their becoming occupational therapists.

Further Reading

American Journal of Occupational Therapy, a journal published by the American Occupational Therapy Association

Kinsinger, Robert E., editor, Health Technicians, J.G.Ferguson Publishing Company, Chicago, 1974, pp. 150-57

Professional Organization Where More Information May Be Obtained

American Occupational Therapy Association
6000 Executive Boulevard
Suite 200
Rockville, Maryland 20852

To Broaden Your Understanding

- do volunteer or paid work in the occupational therapy department of a hospital or health care facility
- gain some kind of work experience in a health care institution
- talk with an occupational therapist about his/her work
- write to schools and the professional organizations

Medical Social Worker

The medical social worker is skilled in helping a patient and his family handle personal problems that result from severe or long illness or disability. The problem is usually social, emotional, or financial—or all three. But, whatever its nature, it can be severe enough to retard recovery and prolong convalescence. The patient who makes the best response to medical treatment is usually the one who is easiest in his mind. Thus the services of the medical social worker are an integral part of the patient's total treatment.

"I'll lose my job now that this bad heart means I can't carry heavy loads anymore," says one patient. The medical social worker can help him select a job which is satisfactory to him and which the physician agrees will not be overtaxing.

"I can't sleep for worrying about where the children can live," says a hospitalized mother. Again, this is a problem for the medical social worker who knows the family circumstances.

And what of the individual who lives in a boarding house and must suddenly begin following a restricted diet?

Or the child crippled by polio whose family must learn to treat him as a "regular" member of the family as far as possible?

Illness makes the average man's problems seem bigger. But they often are bigger—and may be of crisis proportions. The medical social worker and the patient, and often his family, together think through all angles of the problem to be tackled, which may include not only immediate needs but also plans for convalescence.

These are all human problems—all requiring tact and talent in human relations, professional skill, and judgment. And there is no magic formula.

Social workers are trained to understand people and their personal and social needs. Medical social workers give particular attention to these needs and the related problems that are associated with illness and disability. They know that everyone reacts to trouble in his own way. Some people withdraw, some become defiant, some bluster, and some become irritable. Even if the patient keeps his head and his temper, he may need help.

A great push has developed in recent years to get patients out of hospitals and into familiar surroundings. The social worker has become an important link for the patient between hospitalization and the return to normal life in the community. Along with an understanding of human nature, social work requires a thorough professional knowledge of all the community resources that can be tapped in order to assist the individual, and a thorough familiarity with the community as a whole and its social issues.

The social worker has become an advocate for changes in existing and established community services that must be remodeled to meet the changing needs, thus fostering the health and well-being of the patients. As an advocate, he assists in organizing groups to bring pressure for changes by dramatizing the problems. The social worker tries to mobilize efforts of all agencies to focus attention on the complex aspects of these problems. Frequently, the social worker needs to call on one or another of these resources for special services. The community's homemaker service, for example, may provide a homemaker to look after the family while the mother is in the hospital, or a home health aide to help out when someone who lives alone is convalescing. In other cases, the social worker may need to get the advice and assistance of an employment counseling service, or a child placement agency, or a lawyer, or a schoolteacher, or whoever can help get to the heart of the patient's particular problems.

The medical social worker is one of the essential members of the patient's immediate medical team, which is directed by the physician. The practice of medical social work appeals particularly to men and women who think of health not in the abstract sense of the scientific laboratory but in terms of human living—of people. In short, the job is people, the service an integral part of caring for patients—of all kinds, every creed and color, every field of interest, every type of personality, and with every conceivable human problem.

Medical social workers are employed in hospitals, clinics, public and private health centers; local, State, and Federal public health departments; military and veterans' hospitals; and voluntary health agencies concerned with special groups—for example, crippled children, the blind, the deaf, patients with tuberculosis, heart disease, or cancer, or handicapped people in need of rehabilitation. Experienced medical social workers also teach in universities—in schools of medicine, public health, and social work.

The successful medical social worker needs a special combination of personal qualities. Objective good judgment, the capacity to stand off and look at all sides of human problems, is as important as warm sympathy. The profession demands a genuine liking and respect for people, and faith in them. Of special importance to the medical social worker is the ability to work as a member of a team.

The skilled practice of medical social work requires the highest quality of professional preparation. A medical social worker must have a bachelor's degree from an accredited college or university.

There are 200 accredited colleges and universities in the United States, and two in Canada, offering undergraduate programs in social welfare that prepare students for direct entrance into social welfare employment or for graduate education. Graduate social workers can attain master's degrees upon completion of a 2-year program at any of 73 accredited colleges and universities in the United States and 4 in Canada. About one third to a half of the semester hours are in field instruction that relate academic work to practical experience. Programs for the doctoral level are available in 23 accredited colleges and universities in the United States and 2 in Canada. A doctoral degree is required for university teaching, advanced practice, policy formulation, and administration. Many scholarships and fellowships are available to qualified students. An estimated 80 to 85 percent of all graduate students receive some sort of financial assistance.

Courses vary from school to school, but all accredited programs cover five major areas of knowledge: human behavior and the social environment; social welfare policy and services; the methods of social work (the process of intervening in the flow of events to help solve a problem or develop a resource); research; and direct engagement in service (field practice). The Council on Social Work Education is the accrediting agency in the United States and Canada for social work education.

EDUCATIONAL PROGRAMS IN SOCIAL WORK - ILLINOIS

Required Special Training: a 4-year bachelor's degree program in social work. A master's degree (1 to 2 years in length) is desirable for those intending to remain in this field. Some programs offer a number of courses dealing with medical aspects of social work; other programs do not offer such courses, making it necessary for the student to learn the medical aspects while on the job or through some other means.

Social Worker

George Williams College Downers Grove 60515	(bachelor's and master's degree programs)
Jane Addams Graduate School of Social Work at Chicago Circle Box 4348 Chicago 60680	(bachelor's, master's and doctoral programs)
Loyola University Chicago 60611	(master's degree program)
Roosevelt University Chicago 60605	(bachelor's degree program)
School of Social Service Administration University of Chicago Chicago 60637	(bachelor's, master's, and doctoral degree programs)
University of Illinois Jane Addams School of Social Work Urbana 61801	(bachelor's, master's, and doctoral degree programs)

MEDICAL SOCIAL WORKER - Further Information

Employment Prospects

While employment prospects in some fields of social work were not good in 1974, they were reasonably good in medical social work. Opportunities were quite good for persons with bachelor's degrees in social work and better for those with master's degrees in social work. Those with bachelor's degrees in areas other than social work continued to be employed in social service positions requiring social work skills, but their long-range career prospects were not as good as for those with degrees in social work.

Salaries

While a typical annual starting salary in Illinois for those with a bachelor's degree in social work was approximately $7,600 in 1974, social workers in medical settings made about $8,000 to $9,000. Persons with a master's degree in social work received beginning salaries of $10,000 to $13,000. Many experienced social workers earned $15,000 to $25,000 a year.

Career Mobility

Persons interested in medical social work will find it easier to find employment after they have earned their social work degree if they take their required field work experience in some sort of medical setting. Medical social work is carried on in a large number of settings. In hospitals social workers work in psychiatric units, physical rehabilitation units, and in some larger hospitals they may work in specialized areas, such as pediatrics. In the hospital as well as in other settings, the experienced, competent practitioner eventually will assume greater responsibility and receive a higher income. The master's degree in social work is nearly essential for those aspiring to positions of major responsibility.

The range of work performed by the social worker is increasing rapidly. In general there has been a trend in recent years for the hospital-employed social worker to devote more of his/her efforts to people while they are outside of the hospital: counseling about matters from the payment of medical bills to teen pregnancies to death and dying, visiting homes to aid the adjustment of recovering patients, and visiting homes to confirm reports of child abuse, malnutrition, and so on.

Further Reading

Social Work, a journal published by the National Association of Social Workers

Social Case Work, a journal for social workers

Abstracts for Social Workers, a journal for social workers

Hallowitz, E. "Innovations in Hospital Social Work," *Social Work*, July, 1972, pp. 89-97.

Teague, Doran. "Social Services Enterprises: A New Health Care Model," *Social Work*, July, 1971, pp. 66-74

Professional Organizations Where More Information May Be Obtained

Council on Social Work Education
345 East 46th Street
New York, New York 10017

National Association of Social Workers
600 Southern Building
15th and H Streets, N.W.
Washington, D.C. 20005

To Broaden Your Understanding

-obtain volunteer or paid work experience as a camp counselor, an aide in a hospital or nursing home, a recreation leader, or as any other kind of worker in an employment setting that will give you a chance to improve your understanding of human relations.

-visit and talk with the workers in some of these agencies: mental health centers, child welfare and public assistance agencies, day care centers, public health departments, Red Cross, etc.

-write to professional organizations and schools

Speech Pathologist and Audiologist

It is estimated that 1 out of every 20 people in this country has a speech problem which needs treatment.

The goal of speech pathologists and audiologists is to help children and adults with speech problems to communicate as nearly normally as possible.

Following are some of the types of programs with which the speech pathologist and audiologist work: lisping, cleft palate, impaired hearing, talking difficulties resulting from cerebral palsy, talking difficulties resulting from emotional or physical disturbance or retardation.

In speech disabilities which have a physical cause, the clinician may need to work with physicians and dentists. When the disorder is emotional in origin, he may need to cooperate with a psychiatrist or a psychologist. A vocational counselor may be brought in if the speech problem is a handicap to employment. Other professional people with whom the speech pathologist and audiologist work are the public health nurse, the social worker, and the school teacher.

Both men and women are needed in this field. At the present time, about 3 out of 4 clinicians are women, but an increasing number of men are taking up this work. The person trained in speech pathology and audiology has a wide choice of areas where he can be of service. Many public schools need clinicians to work with children with speech troubles. In addition, there are a number of both public and private schools which have been set up exclusively for children handicapped by deafness, cerebral palsy, or other conditions which affect their ability to talk. Speech pathologists and audiologists are important members of the staff of such schools. There are also mobile speech clinics which travel to outlying communities to serve both children and adults.

Other organizations employing speech pathologists and audiologists are social agencies, clinics at colleges, and medical centers. Various Federal, State, and local government agencies employ workers to provide services for crippled children with speech problems and there is a special speech and hearing clinic for members of the Armed Forces.

Many highly trained speech pathologists and audiologists specialize in research work. Others serve as teachers in colleges, medical schools, and training institutions.

The people who can give specialized help are known as speech pathologists and audiologists. Their profession is comparatively new. Before it came into existence, people with speech disabilities had hardly any place to turn for help. Few physicians—even child specialists—had been taught techniques for speech rehabilitation; clinical and consulting psychologists were similarly untrained. Recognition of this need brought a new group of specialists into existence—men and women who had studied the physical and emotional factors involved in speech difficulties and who had learned how to deal with them.

Like many other young health services, this field is in great need of additional personnel. Interesting jobs go begging simply because there aren't enough trained people to fill them.

Special qualities are called for in people who work directly with handicapped children and adults.

First is a real concern for people with physical and psychological impairment and a sincere desire to help them. Second, but equally important, is the ability to work with such problems objectively. The clinician should have a warm, friendly personality that inspires confidence in the person being helped. Patience and perseverance are also needed, since speech rehabilitation is a slow process. Relating well with children is a definite asset, since most of the work in speech rehabilitation is done with youngsters.

To qualify as a speech pathologist, a person must have a master's degree from a college or community with an acceptable department of speech pathology and audiology. In the attainment of the master's degree, he must complete sufficient course credits in speech and hearing to be certified by the American Speech and Hearing Association.

No special college preparation is required, but the student should be well-advised to take a broad liberal arts education with courses in biology, anatomy, physiology, physics, general psychology, adult and adolescent psychology, sociology, and anthropology. Courses in special fields of study related to speech and language are also helpful. These would include linguistics, semantics, phonetics, and introductory courses in speech pathology and audiology.

Professional training, including work at the graduate level, must be taken at a college or university with a program of speech pathology and/or audiology.

The college student will probably decide in his junior year which particular aspect of this profession appeals to him most and then will select his graduate courses with the help of a faculty adviser. Although the curricula leading to a master's degree in speech pathology and audiology vary from college to college, the following basic areas are covered within all professional courses of study: fundamental studies of the processes of normal speech and hearing including anatomy and physiology; acoustics and the psychological aspects of human communications; the nature of disorders of speech and hearing; the measurement and evaluation of speech production, language abilities and auditory processes; clinical treatment and training of children and adults with speech, language, and hearing disorders; and research methodology in the study of speech and hearing. Graduate studies should include preparation in the particular aspects of speech pathology and audiology and related fields which are pertinent to the work the student plans to do. He may concern himself primarily with speech disorders, language impairment, or hearing disorders. However, speech, hearing, and language are so interrelated that professional competence requires familiarity with these three areas.

EDUCATIONAL PROGRAMS IN SPEECH PATHOLOGY AND AUDIOLOGY - ILLINOIS

Required Special Training: a bachelor's degree in any field, followed by a master's and internship experience (a bachelor's degree takes approximately 4 years of study, a master's degree in speech pathology and audiology requires at least 1 full year of study for those students who have an undergraduate background in the field, and about 2 years of study for those whose undergraduate background in another field).

Speech Pathologist and Audiologist

Augustana College*
Rock Island 61201

Bradley University**
Peoria 61606

Eastern Illinois University**
Charleston 61920

Elmhurst College*
Elmhurst 60126

Illinois State University**
Normal 61761

Mundelein College*
Chicago 60626

Northern Illinois University**
DeKalb 60115

Northwestern University***
Evanston 60201

College of Saint Francis*
Joliet 60435

Saint Francis Xavier College*
Chicago 60655

Southern Illinois University**
Edwardsville 62025

Southern Illinois University***
Carbondale 62901

University of Illinois***
Champaign 61820

Western Illinois University**
Macomb 61455

* Offers bachelor's degree only.

** Offers work through the master's degree.

*** Offers work through the doctoral degree.

SPEECH PATHOLOGIST - Further Information

Employment Prospects

In 1975 employment prospects at the state and national level were good. Certified speech pathologists were still being requested for employment in hospital and community speech centers as well as rest homes, public schools, health departments, and research centers. With increasing concern for the health and education problems of the preschool, minority, and aged populations, it appeared that the need for certified speech pathologists would continue--if local, state, and federal support continues in these areas.

Salary

In 1975 a typical starting salary, in clinics in Illinois, for individuals with a master's degree was $10,000. The results of a recent national survey indicated that average salary for members of the American Speech and Hearing Association holding a master's degree was $11,000 to $12,500 (depending on work environment and experience). Eleven per cent of the members reported earnings over $20,000.

Career Mobility

Experienced speech pathologists can return to college to obtain a doctoral degree or they can become clinical supervisors or clinical administrators. Also, if qualified, they can move into state or federal government positions dealing with direction of the profession. With the possible increase in Medicare and Medicaid, there are funding opportunities for individuals with a master's degree to serve as research assistants in dental and medical schools, in such locales as Centers for Craniofacial Anomalies, Cleft Palate Clinics, Otolaryngology Clinics, Ear-Nose-and-Throat Clinics, and Biocommunication Centers.

Further Reading

Asha, a general informational journal published by the American Speech and Hearing Association

Journal of Speech and Hearing Disorders

Journal of Speech and Hearing Research

Journal of Communication Disorders

Speech and Hearing News

Illinois Speech and Hearing Journal

Professional Organization Where More Information May Be Obtained

American Speech and Hearing Association
9030 Old Georgetown Road
Washington, D.C. 20014

To Broaden Your Understanding

- observe the clinical activities of a speech pathologist--in a local hospital, rest home, Easter Seal Center, or school
- talk with a speech pathologist who works in a hospital, school, etc.
- see if you can obtain and view a filmstrip-sound recording entitled "A Compelling Life: A Career in Speech Pathology and Audiology" available from the Career Information Center, University of Utah, Salt Lake City, Utah, or "Communication Disorder Specialist" available from the American Speech and Hearing Association, 9030 Old Georgetown Road, Washington, D.C. 20014
- write to schools and the professional organization

Orthotist and Prosthetist

The prosthetist and orthotist work closely with the physician, surgeon, and therapist to provide total rehabilitation services for the disabled. The prosthetist makes and fits artificial limbs, while the orthotist makes and fits orthopedic braces to support weakened body parts or to correct physical defects, such as spinal malformations. Both work from the physician's prescription, to make devices giving the patient maximum comfort and function. Their work begins after consultation with the patient and with careful and accurate measurements. With this information, they design a device that will meet the individual needs of the patient, constructing it from various materials such as plastic, leather, wood, steel, and aluminum.

Before the work is complete, the patient receives at least one preliminary fitting, enabling the prosthetist or orthotist to make needed changes before finishing the prosthesis (artificial limb) or orthosis (brace). The final step is an evaluation of the appliance, as worn by the patient, by the prosthetist or orthotist, and other rehabilitation specialists. The physical therapist and occupational therapist help the patient learn to use his new equipment.

Qualifications and Education

Anyone who plans a career as a prosthetist or orthotist will need skill with his hands and in the use of tools, as well as considerable mechanical skill and inventiveness. Patience, accuracy, and a keen sense of responsibility are essential. In addition, he should be able to communicate effectively with both patients and other members of the rehabilitation team. Lastly, and of prime importance, he should have a sense of real concern for the welfare of the disabled.

Great advances have been made in prosthetic and orthotic education in the past 10 years. Special courses in prosthetics and orthotics are now offered by several leading universities. These courses are 2 to 5 weeks in duration and are available to persons with some practical experience. The courses include the study of anatomy, biomechanics (study of how the body functions as a mechanical system), engineering as related to prosthetic and orthotic devices, and actual shop experience in orthotic and prosthetic construction.

Until 1971, the basic requirement for practitioner certification was a 4-year apprenticeship program conducted in a facility accredited by the American Board for Certification in Orthotics and Prosthetics, and a passing grade on the certification examination. At present and through 1975, however, a candidate for the examination must have taken, in addition to his apprenticeship, at least three specified short-term courses at one of the colleges or universities accredited by the board. From 1976 through 1979, a candidate will have to have an associate of arts degree in orthotics and/or prosthetics and have had 2 years of clinical experience subsequent to graduation. Beginning in 1980, he will have to possess a bachelor of science degree in orthotics and prosthetics.

In addition to these educational requirements, a candidate will have to present recommendations from three orthopedic surgeons and pass the certification examination.

High school courses recommended for the prospective orthotist or prosthetist include physics, chemistry, mathematics, and biology, as well as shopwork in metal, wood, and plastics. Accounting and business administration courses will be useful to the individual considering the eventual operation of his own facility. A working knowledge of psychology and human relationships is also important in dealing with patients and professional associates.

EDUCATIONAL PROGRAMS IN ORTHOTICS AND PROSTHETICS - ILLINOIS

Orthotist and/or Prosthetist

Required Special Training: Either a) 2-year associate degree program in orthotics and prosthetics plus 3 years clinical experience or b) 2 years of college work to include, but not exceed, 8 semester hours in any one subject--English and speech, biological sciences, physics and engineering, chemistry, mathematics, psychology, and shop training — followed by three short-term courses in orthotics and prosthetics and 3 years clinical experience (there are no such programs in Illinois) or c) 4-year bachelor's degree program in orthotics and prosthetics and 1 year of clinical experience (there are no 4-year programs in Illinois) or d) 4-year bachelor's degree in an area other than orthotics and prosthetics followed by three short-term courses in orthotics and prosthetics and 2 years of clinical experience.

Olive-Harvey College Chicago 60628	(2-year associate degree program--in conjunction with the School of Associated Medical Sciences and the Orthopedics Department of the Abraham Lincoln School of Medicine of the University of Illinois Medical Center)
Northwestern University Chicago 60611	(Beginning in January 1976, a 6-month program will be offered to those with a minimum of two years of college, preferably with an emphasis in science course work; in addition, short-term courses in orthotics and prosthetics for health practitioners are offered)

Orthotic-Prosthetic Assistant

Required Special Training: High School diploma or its equivalent and 3 years of apprenticeship, of which 2 years must involve patient contact (inquire about apprenticeships at Veterans Administration hospitals and other larger hospitals)

Orthotic-Prosthetic Technician

Required Special Training: Tenth-grade education and 2 years of apprenticeship (inquire about apprenticeships at Veterans Administration hospitals and other larger hospitals)

ORTHOTIST and PROSTHETIST - Further Information

Employment Prospects

In 1974 there were 70 certified orthotists and prosthetists in Illinois and possibly an equal number were uncertified. (Certification is granted after passing an examination designed to determine professional competency.) It is becoming increasingly important to be certified. Due to increasingly high standards of health care, many employers seek certified practitioners. Not only does certification result in more job opportunities, but also in greater salary. Nationally, there were close to 3,000 orthotists and prosthetists. They worked in hospitals, clinics, and in private facilities which fabricate and fit artificial limbs and braces. In 1974 the employment outlook was excellent and was expected to continue to remain so for the foreseeable future.

Salary

In 1974 the average beginning salary for certified orthotists and prosthetists in the Midwest ranged from $11,000 to $15,000 yearly. Those who were not certified made an estimated $1,000 to $2,000 less per year in comparable positions.

Career Mobility

Those in the field tend to remain. A few practitioners enter the related fields of physical therapy and occupational therapy. However, it is more common for physical therapists and occupational therapists to seek additional training and experience so that they become orthotists and prosthetists. There are no proficiency or equivalency examinations available to persons desiring to move into orthotics and prosthetics. (Such examinations, which are available in a few other health fields, test for competence in the professional course work and/or knowledge gained through related work, and can result in shortening the required training period.)

Further Reading

Science Research Associates, Inc. Orthotists and Prosthetists, Occupational Brief No. 288, Chicago, 1973

Professional Organization Where More Information May Be Obtained

American Orthotic and Prosthetic Association
1440 N Street, N.W.
Washington, D.C. 20005

To Broaden Your Understanding

-visit a hospital, clinic, or private facility where orthotic and prosthetic appliances are fitted, designed, and made and talk to the persons who work there

-write to schools and professional organizations

Orthotic-Prosthetic Assistant and Technician

The orthotist and/or prosthetist is aided in his work by assistants and technicians who are also certified by the board.

The orthotic-prosthetic assistant works under the direct supervision of the orthotist-prosthetist and is responsible for fabricating and fitting devices. He is closely involved in patient care. To become certified, the assistant must possess a high school education or the equivalent, he must have 3 years of accredited apprenticeship training, and he must pass the assistant certification examination.

The orthotic-prosthetic technician is involved mainly in the fabrication of components and devices; he does not take part in direct patient-care activities. To become certified, the technician must have completed the tenth grade, he must have 2 years of nonformal apprenticeship training, and he must pass the technician certification examination.

The prosthetist or orthotist may work in a privately owned facility or in a hospital laboratory, or he may be affiliated with a government agency such as the Veterans' Administration. In small organizations, the same person may fabricate and fit both limbs and braces. In larger facilities, a skilled orthotist or prosthetist may employ one or more assistants and technicians to do the actual construction work under his supervision, while he himself specializes in adjustment and fitting.

Employment in this field is steady, and the skilled orthotist or prosthetist who keeps up with new developments is needed today as never before.

The skilled prosthetist or orthotist can expect a number of tangible—and intangible—rewards. Like other people who provide health services, he will find in his work a deep satisfaction that cannot be measured in dollars and cents. He sees in a dramatic way how his skills help handicapped people to lead happier lives. As he adjusts an artificial limb or brace to make it fit and work better, he may be restoring a man to a paying job or enabling a woman to care for her home and children. It is responsible and challenging work which can bring a feeling of intense personal satisfaction and pride.

Employment Prospects

In 1974 there were an undetermined number of assistants and technicians. Nationally, there were only about 200 technicians and 200 assistants who had been certified. (Certification is granted to the assistant or technician after passing an examination designed to determine his professional competence.) It is becoming increasingly important to be certified. Due to increasingly high standards of health care, many employers seek certified practitioners. Not only does certification result in more job opportunities, but also in greater salary. Many more were not certified. In 1974 the employment outlook was excellent and was expected to continue to remain so for the foreseeable future.

Salary

In 1974 the average beginning salary for certified assistants in the Midwest ranged from $7,000 to $10,000 annually. Technicians averaged $5,000 to $7,000 in their first year of work. Non-certified workers' salaries were generally lower by $1,000 or more per year.

Career Mobility

Many young assistants and technicians tend to remain in this field. Salaries are good considering the amount of education and training required to enter the field. Assistants are eligible to apply for apprenticeship experience at the technician level or move directly to the educational program required to become an orthotist or prosthetist. Technicians may apply for the educational program necessary to practice as an orthotist or prosthetist. There are no proficiency or equivalency examinations of professional knowledge available to assistants or technicians desiring to move upward in this field, or for those in related fields such as occupational therapy and physical therapy to move into orthotics and prosthetics. (Such examinations, which are available in a few other health fields, test for competence in the professional course work and/or knowledge gained through related work, and can result in shortening the required training period.)

Further Reading

Science Research Associates, Inc. Orthotists and Prosthetists, Occupational Brief No. 288, Chicago, 1973

Professional Organization Where More Information May Be Obtained:

American Orthotic and Prosthetic Association
1440 N Street, N.W.
Washington, D.C. 20005

To Broaden Your Understanding:

-visit a hospital, clinic, or private facility where orthotic and prosthetic appliances are fitted, designed, and made and talk to the persons who work there

-write to schools and professional organizations

RECREATIONAL THERAPIST

(Therapeutic Recreation Specialist)

For people confined to mental institutions and hospitals, and those handicapped by a physcial or emotional disability, how they spend their often long leisure hours can have a decided effect on how quickly and how well they recover. Recreational therapists realize this and, accordingly, their work is centered around a particular theory of recreation, namely that "play" is good medicine and that an institutionalized or home-bound patient can make a much quicker recovery and/or adjustment if his leisure time can be spent to his benefit.

Recreational therapists may work with groups of patients or individuals. Depending upon where they are employed, they may deal with all sorts of illnesses and disabilities -- old age, mental illness, paraplegia, mental retardation -- or they may specialize in one type of illness or disability and work only with those patients -- the mentally retarded, crippled children, old people, stroke victims, etc.

The recreational therapist's program would probably include such activities as athletics, arts and crafts, dancing, music, movies, camping, parties, and a patient newspaper. The primary goal behind all these different activities is for the patient to experience beneficial exercise, social participation, and group interaction which might help his recovery and/or adjustment. Such activities are also intended to aid a patient's readjustment to the outside world, before he is discharged.

Qualifications and Education

Students interested in becoming recreational therapists should enjoy working with people; they should be adept at communicating ideas and instructions to people of varying levels of intelligence; they should possess patience and tolerance. Physical coordination is necessary in order to demonstrate and teach others various athletic and dance skills. Manual dexterity is helpful for teaching ceramics and other crafts. Good color discrimination is necessary for those teaching art to patients. In addition, creativity, organization, and an ability to teach others are extremely important assets.

A bachelor's degree in recreational therapy or therapeutic recreation (a program usually given through the physical education department) is the minimum requirement for work as a recreational therapist. A master's degree, with a major in recreational therapy, is necessary for positions in administration, research, and teaching.

EDUCATIONAL PROGRAMS IN RECREATIONAL THERAPY - ILLINOIS

Recreational Therapist

Required Special Training: 4-year bachelor's degree program in recreational therapy in a college or university

George Williams College Downers Grove 60515	(bachelor's and master's degree programs)
Southern Illinois University Carbondale 62901	(bachelor's and master's degree programs)
University of Illinois Urbana 61801	(bachelor's, master's and doctoral programs)
University of Illinois at Chicago Circle Chicago 60607	(bachelor's degree program--this program is the Kinesiotherapy program offered by the School of Physical Education)

Recreational Therapy Assistant

(Prerequisite: high school diploma or its equivalent)

Required Special Training: 2-year recreational therapy assisting program in a community college

Central YMCA College
Chicago 60606

Moraine Valley Community College
Palos Hills 60465

Parkland College
Champaign 61820

Triton College
River Grove 60171

RECREATIONAL THERAPIST - Further Information

Employment Prospects

In 1974 employment prospects for recreational therapists were very good. Increased recognition of the importance of the leisure needs of handicapped and special populations has provided an impetus for federal, state and local agencies to seek qualified, trained personnel to provide these services.

Salary

Recreational therapists with no prior experience generally received from $8,000 - $10,000 yearly. In 1974 salaries for recreational therapists with a master's degree and/or several years of work experience ranged from $10,000 to $15,000. Top level jobs paid up to $25,000 and more. For the most part salary depended on the type of employing agency.

Career Mobility

Those who show that they are capable workers may assume increased responsibility after a period of work experience. A master's degree in therapeutic recreation is desirable for advancement to administrative positions and for serving as a consultant to agencies with therapeutic recreation programs.

Further Reading

Frye, Virginia and Peter, Martha, Therapeutic Recreation: Its Theory, Philosophy and Practice, The Stackpole Company, Harrisburg, Pennsylvania, 1972

Therapeutic Recreation Journal, published by the National Therapeutic Recreation Society

Professional Organization Where More Information May Be Obtained

National Therapeutic Recreation Society
1601 N. Kent Street
Arlington, Virginia 22209

To Broaden Your Understanding

-obtain volunteer or paid work experience related to therapeutic recreation in a mental health facility, nursing home, rehabilitation center, or other organization providing therapeutic recreation services.

-talk with a recreational therapist about his/her work

-write to schools and the professional organization

RECREATIONAL THERAPY ASSISTANT

(Therapeutic Recreation Technician)

The delivery of therapeutic recreation services cannot be done by recreational therapists alone. While they may plan activities and evaluate the therapeutic value of those activities, often it is the recreational therapy assistant (therapeutic recreation technician), under the direction of the recreational therapist, who implements the programs on a person-to-person basis. Often it is the assistant who actually teaches a group of retarded children how to square dance, who organized and oversees the bridge tournament for the men and women of a retirement home, or who coaches paraplegics in wheelchair basketball. The daily work load of a recreational therapist necessarily deprives him/her of frequent patient contact -- in larger hospitals, clinics, and rehabilitation centers there are meetings to attend and evaluations to be made; there is consulting to be done with physicians and counseling to be done with patients' families; there is reading, research, and planning to be done and all that takes time. Meanwhile, it is the assistant who is seeing to the patients' immediate recreational needs, supervising the recreational activities, helping those patients having difficulties, and all the while observing the patients' progress so that it may be reported to the recreational therapist and the therapeutic value of the recreation be reassessed. In some cases, the recreational therapy assistant may take on supervisory and administrative tasks. This often happens when an assistant is employed in a small facility and the recreational therapist works only part-time or in a consulting capacity.

Recreational therapy assistants can find employment in hospitals, clinics, rehabilitation centers, public and private schools, correctional facilities, community mental health facilities, nursing homes, and summer camps serving those with certain disabilities.

Qualifications and Education

Students considering a career in therapeutic recreation should have a strong desire to serve others and work closely with them. They ought to enjoy teaching and participating in recreational activities.

Training to become a recreational therapy assistant (therapeutic recreation technician) involves 2 years in a community college therapeutic recreation program. Courses include instruction in areas such as disabling conditions, recreation activity skills and activity analysis, human growth and development, program planning, and group dynamics.

RECREATIONAL THERAPY ASSISTANT - Further Information

Employment Prospects

The position of recreational therapy assistant (Therapeutic recreation technician) was a new one. Studies indicated that there is a need for such persons. Future studies will be completed beginning in late 1975 to assess employment prospects.

Salary

Because of the newness of this position, there were no salary figures. It was expected that assistants with no prior work experience would receive between $7,000 and $8,500 per year.

Career Mobility

Experienced, capable recreational therapy assistants may advance to positions of greater authority in the agencies in which they work, or in other agencies employing therapeutic recreation personnel. Supervisory and administrative jobs usually require completion of a bachelor's degree. While the two-year training programs offered by community colleges are not specially designed for transfer to four-year institutions it may be possible to arrange for transfer of certain credits to individual colleges.

Further Reading

Kraus, Richard, Therapeutic Recreation Service, W.B. Saunders Company, Philadelphia, Pennsylvania, 1973

Stein, Thomas and Sessoms, H. Douglas, Recreation and Special Populations, Halbrook Press, Inc., Boston, Massachusetts, 1973

Therapeutic Recreation Journal, published by the National Therapeutic Recreation Soceity

Professional Organization Where More Information May Be Obtained

National Therapeutic Recreation Society
1601 N. Kent Street
Arlington, Virginia 22209

To Broaden Your Understanding

-obtain volunteer or paid work experience related to therapeutic recreation in a mental health facility, nursing home, rehabilitation center, or other organization providing therapeutic services.

-talk with a recreational therapist about his/her work

-write to schools and the professional organization

Music Therapist

Throughout the ages, man has turned to music to express his feeling of joy, despair, love, and hate. For each it serves a different purpose, and for some many purposes. Now, for those who are disabled, music may become an actual part of medical treatment.

Music therapy, the professional application of music to accomplish therapeutic aims, is used to aid patients afflicted with long-term disabilities such as tuberculosis, and with progressive diseases such as muscular dystrophy. For them it offers a new interest to make life more worthwhile. Even more effective is its use with the mentally ill, for music therapy may achieve changes in the patient's behavior that will give him a new understanding of himself and of the world around him. This should serve as a base for improved mental health and more effective adjustment to normal living.

A high percentage of the trained music therapists are now employed in psychiatric hospitals. Treatment is given to patients of all age groups, ranging from disturbed small children and adolescents to adults, who suffer from mental illness of many types and varying degrees of seriousness. As a member of the mental health team, the music therapist devises programs to achieve aims prescribed by the attending psychiatrist. Periodically, the therapeutic results are evaluated.

Recently, there has been a noticeable trend toward treatment of the mentally ill at outpatient clinics, locally administered and staffed, but supported by Federal Government grants. Discharged patients of mental institutions may be under continued observation and receive required treatment there, while others, who have not been institutionalized, may find the attention they need. Customarily, the mental health team of the clinic includes a psychiatrist, a psychologist, a nurse, a social worker, and often a music therapist.

Many children with other handicaps profit from music therapy. The mentally retarded, the cerebral palsied, the crippled, and the blind make up a group that is second only to the mentally ill in numbers receiving music therapy. Rewarding personal satisfaction may be expected of the music therapist who works with children.

Music therapists may devise programs of many kinds in an effort to gain and to hold the patient's interest. Much depends upon his suceptibility to training, for what would be within the realm of one would be inappropriate for another. Group singing is commonly used. Musical appreciation and musical education is appealing to others. To the most trainable, instrumental instruction is offered, and, eventually, some of this group may qualify for orchestral work. Every effort is made to improve skills acquired in past years and to develop an intensified musical interest which will, in itself, give a new dimension to normal living.

The demand for registered music therapists exceeds the supply. Approximately 600 were actively employed throughout the United States in 1971. The greatest number served in psychiatric hospitals, but others worked in general hospitals, isolation hospitals, and schools for exceptional children.

Qualifications and Education

A baccalaureate degree in music therapy is essential for a career in this field. For those who have a degree in music, the required therapy courses may be taken at graduate school as a part of the work toward a master's degree. Also required, to qualify as a registered music therapist, is a 6-month internship at an approved psychiatric hospital, affiliated for clinical purposes with an accredited music therapy school. In 1974, 28 American colleges and universities were approved by the National Association of Schools of Music to offer the degree of bachelor of music therapy.

EDUCATIONAL PROGRAMS IN MUSIC THERAPY - ILLINOIS

(Prerequisite: High school diploma or its equivalent)

Required Special Training: 4-year program in music therapy, after which a bachelor's degree is awarded

Music Therapist

DePaul University
Chicago 60604

Illinois State University
Normal 61761

Western Illinois University
Macomb 61455

MUSIC THERAPIST - Further Information

Employment Prospects

In 1975 there were more positions available for music therapists than there were music therapists. Increasingly, therapists were finding employment in community mental health centers, working with day (non-hospitalized) patients. It was not possible to speculate on employment prospects in the next decade.

Salary

The salaries of music therapists in 1975 were quite similar to those paid to public school teachers. In Chicago, inexperienced therapists received nearly $10,000 per year. Those employed in smaller institutions and in smaller communities usually received lower pay. Experienced therapists received incremental pay increases, much the same as teachers.

Career Mobility

Capable, experienced music therapists may assume supervisory responsibilities. With two years of work experience plus a master's degree in music therapy or related field, it is possible to teach in an educational program for the preparation of music therapists. Persons with a bachelor's degree in music therapy have the academic background to move into educational programs or work in psychology and the social service areas. Persons entering music therapy from other fields most frequently come from public school music teaching, private music teaching, and professional music; fewer come from psychology, nursing, and other social service areas.

Further Reading

Journal of Music Therapy, a journal published by the National Association for Music Therapy, Inc.

Gaston, E. Thayer, Music in Therapy, Macmillan Publishing Company, New York, 1968.

Professional Organization Where More Information May Be Obtained

National Association for Music Therapy
P.O. Box 610
Lawrence, Kansas 66044

To Broaden Your Understanding

- -request the name of a music therapist located in your area from the National Association for Music Therapy, Inc.
- -read about music therapy and then locate a hospital or rehabilitation center providing music therapy services, and ask to observe and to do volunteer work
- -write to schools and the professional organization

Pharmacist

The pharmacist may be found in a variety of work settings, but no matter where he practices his basic functions remain the same. His primary responsibility is to compound and dispense medicine on the order of a physician or other qualified practitioner. To perform his function at the highest standards, he must be fully acquainted with the physical and chemical properties of drugs and the way they behave in the system. He must know how a particular drug will affect a human being, alter the cause of a disease, and react with other drugs being taken. He must also know how a drug may react in laboratory tests of blood and other human tissues.

The pharmacist serving in the community must be proficient in business matters, since he must purchase and sell hundreds of health-related items. In the hospital, the pharmacist may be responsible for the selection and purchase of all medicines used by the facility. In settings where hiring and supervision of personnel is required, the pharmacist will need management ability.

The pharmacist often serves as educator—both to the public and to the health practitioner in the proper use of drugs.

Qualifications and Education

Like the physician or nurse, the pharmacist assumes responsibility for human life. He must be dedicated from the start to conscientious and dependable services. Meticulous regard for accuracy, orderliness, and cleanliness is essential.

The pharmacist's ethics must be unquestionable. He is entrusted with the storage and distribution of dangerous and habit-forming drugs, and must be scrupulous in handling or dispensing them.

A person intending to become a pharmacist should be good in scientific subjects, enjoy working with people, and have better-than-average intelligence.

The number of women entering the profession of pharmacy is increasing steadily. Between 1959 and 1969 the percentage of female pharmacy students doubled. Today 1 student in 5 is a girl.

Women work in all areas of the profession. Many work part time when their family responsibilities become heavy.

To obtain a degree in pharmacy, the student must complete either a 5-year or 6-year program of education after graduation from high school. The 5-year program leads to the degree of bachelor of science in pharmacy. The 6-year program leads to the degree of doctor of pharmacy.

Some colleges of pharmacy accept the student immediately after graduation from high school, and offer the full 5-year or 6-year program themselves. Others permit or require the student to take the first year or 2 years of the 5-year or 6-year curriculum at a college or junior college.

There is no exception to the rule, however, that a minimum 3 years of professsional education must be acquired at an accredited college of pharmacy. In California, only those students who have studied in pharmacy college for at least 4 years are eligible for a license to practice.

There are 72 accredited schools of pharmacy in the United States and in Puerto Rico. The student should write the pharmacy school he hopes to enter to learn about entrance requirements and curriculum and to find out whether or not the school requires or permits him to take the first year or two of the program before admission. The student may choose, for financial reasons, to take his preprofessional courses at a college or junior college near his home.

In high school the student should take courses designed to prepare him for entrance to college. His grades should be good. Colleges of pharmacy do not judge an applicant solely by his high school marks, but these certainly are an important factor. Many pharmacy colleges require applicants to take aptitude tests, the results of which are considered along with the high school marks.

The curriculum in high school should be planned carefully. The general idea is to get as good a background as possible in English, mathematics, history, and government or social studies. Courses in chemistry, biology, and physics are especially helpful in preparing students for the many science courses required in the pharmacy curriculum.

Licensing and Registration

Because pharmacists have such heavy responsibilities and are so closely concerned with the health of the people they serve, all States have strict laws about licensing and registration. These may vary from State to State and the prospective pharmacist is instructed, while still in college, about the regulations applying in areas where he may wish to practice.

All of the States but one require graduation from an accredited school of pharmacy. Almost all of them, in addition, require practical experience, known also as internship. In most States, this requirement can be met by combining clinical assignments done in connection with classwork and experience gained during summer vacations. The student should check internship carefully, since this may weigh heavily in obtaining a license to practice.

Before he can receive a license, the graduate in pharmacy must pass an examination given by the board of pharmacy in the State where he plans to practice. If he passes, he is then registered by the board. Most States honor licenses issued by other States. There are a few exceptions, and the pharmacist will be informed of these while he is still in school.

Community Pharmacies

Of the more than 100,000 registered pharmacists in the country, about 8 out of 10 work in community pharmacies.

There are several kind of community pharmacies, and the range of the pharmacist's professional work depends to some extent upon where he is employed. For example, the strictly prescription pharmacy or apothecary shop handles nothing but drugs and other items related to medical care. In the general community pharmacy, more than half the gross volume of business comes from this source, and the remainder comes from sales of merchandise found traditionally in drugstores—cosmetics, stationery, cameras, and the like. In some pharmacies, sales of general merchandise and fountain sales make up more than 50 percent of the business. In large general merchandising pharmacies, the trend is toward hiring managers trained in business techniques so the pharmacist is utilized more in his professional capacity.

The young pharmacist just out of school usually starts his career as an assistant to the owner or manager of a pharmacy. As he gains experience, he advances to managerial duties. Eventually, he may transfer to a larger pharmacy with expanded responsibilities, or become the owner or part-owner of a community pharmacy or an apothecary shop.

Pharmacists in Health Facilities

One of the rapidly expanding and important areas of practice open to pharmacists is pharmacy service in a hospital, nursing home, extended care center, or clinic. The routine duties of the pharmacist in health facilities are quite similar in many respects to those of the pharmacist dispensing prescription orders in a community pharmacy, but also include highly specialized tasks for which special training and experience are required. The size and character of the facility help to determine the functions of the pharmacist. In some of the larger facilities, there is considerable manufacturing of sterile solutions and drug preparations.

The health facility pharmacist works very closely with the medical staff as well as with the administrator's office. He is the custodian of the facility's pharmaceutical supplies and is responsible for purchasing these and a variety of other related supplies. He acts as a consultant on drug problems, and as the instructor in this field to other members of the facility staff. Frequently he is the monitor for the drug component of treatment. These facilities now employ approximately 10,000 registered pharmacists for full-time work, and in addition perhaps a third that many on a part-time basis. The need for pharmacists to practice in hospitals, nursing homes, and clinics continues to grow, and this practice environment is becoming increasingly attractive to pharmacists.

Smaller facilities frequently depend on nearby community pharmacies for their services or employ a part-time pharmacist. The tendency, however, is to engage a full-time pharmacist who can also take on related tasks, such as handling certain laboratory routines, sterilization of supplies, and administrative duties. Hospitals of 50 beds or more are taking on full-time pharmacists, and those with 100 beds or more find it practically impossible to get along without two or more pharmacists.

Any pharmacist licensed to practice may do so in this environment; however, a pharmacist wishing additional training and experience may become a resident in a hospital pharmacy recognized for high quality of service and facilities. It is also possible to augment or combine this practical experience with a year or more of study at an accredited graduate school associated with a school of pharmacy leading to the degree of master of science in hospital pharmacy. This experience may also be used in the program leading to the doctor of pharmacy degree.

The broad preparation and experience of the hospital pharmacist and his intimate contact with hospital administration may lead to more and more administrative work. If he has a flair for this, he can supplement his education by attending an accredited school of hospital administration, and become fully qualified to step into an administrative post. (For a description of this career, see the section on Hospital and Health Services Administration.)

Opportunities

Pharmacists are employed by the U.S. Public Health Service and all three branches of the Armed Forces. Serving as commissioned officers, they can rise to the rank of colonel in the Army and to equivalent ranks in the Public Health Service, the Navy, and the Air Force. Pharmacists are also employed by the Veterans' Administration, where they have civil service status.

Many of the drugs and medicines which pharmacists formerly compounded in their own pharmacies are now produced on a large scale by drug manufacturers. In addition, modern antibiotics, "sulfa" drugs, vaccines, and the like are made only in special plants which rely heavily on research, product development, and product control. This means that the pharmacist's services are needed in a variety of establishments.

The pharmacist who is particularly interested in the scientific aspects of his profession can find employment in the laboratories of pharmaceutical manufacturers. He may go straight to such employment from pharmacy college, but, if research is his goal, he should go on to graduate study in pharmacy, pharmacology, pharmaceutical chemistry, or other pharmaceutical sciences. These are growing fields with excellent prospects for both men and women.

Prospects

The well-qualified pharmacist can be sure that the demand for his services will increase in the future. He can also count on recognition for his contribution to the community.

Pharmacy has a direct relationship to pharmacology and other biophysical sciences. Through the research activities of drug manufacturers as well as of nonprofit laboratories, the development of new drugs and other dosage forms has become one of the major areas of investigation and progress in the health-related sciences. On this front, pharmacy and the research work associated with it have a direct relationship with the occupations covered in Basic Sciences in the Health Field.

For further information, write to:

American Pharmaceutical Association
2215 Constitution Avenue, N.W.
Washington, D.C. 20037

National Association of Boards of Pharmacy
77 West Washington Street
Chicago, Illinois 60602

American Society for Pharmacology and
Experimental Therapeutics
9650 Rockville Pike
Bethesda, Maryland 20014

American Association of Colleges
of Pharmacy
850 Sligo Avenue
Silver Spring, Maryland 20910

EDUCATIONAL PROGRAMS IN PHARMACY - ILLINOIS

Pharmacist

(Prerequisite: At least 1 year of college)

Required Special Training: Usually 5 years of study in a professional school of pharmacy.

College of Pharmacy University of Illinois at the Medical Center Chicago 60680	(prerequisite: 1 year of college; the professional program is another 5 years in length)

Pharmacy Technician

Required Special Training: Either a) on-the-job training under the supervision of a pharmacist, b) brief training program offered by a number of hospitals (there is no list of Illinois hospitals offering such training; check with the hospital of your choice), or c) a 2-year program for preparation as a pharmacy technician in a community college (there are no community college programs in Illinois).

PHARMACY TECHNICIAN

With the many duties to be performed daily by today's pharmacist, it is difficult for him to function without an assistant. The pharmacy technician performs all those duties not requiring the specific knowledge and judgement of a registered pharmacist. Whereas the pharmacist must interpret the order, certify it, and choose the proper drug amounts, it is usually the pharmacy technician who prepares the label, fills and packages the prescription, and maintains all records concerning the purchase. For drugs which must be prepared in the pharmacy, either the pharmacist prepares them himself or he supervises the technician in the preparation. In any event, it is the technician who prepares the labels, selects the drugs to be used in the prescriptions (according to the pharmacist's directions), selects the equipment to be used in the mixing, and weighs and measures the proper amounts (as directed by the pharmacist). In addition, the technician packages and records the prescriptions.

Other duties of the pharmacy technician include checking supplies, maintaining inventory records, purchasing (under the direction of the pharmacist), receiving supplies, and billing customers.

Pharmacy technicians are employed in all places that employ pharmacists: privately owned pharmacies, hospital pharmacies, laboratories in private drug industries, pharmaceutical companies, the government, and some universities.

Qualifications and Education

The nature of the work performed by the pharmacy technician requires that he/she possess the qualities of accuracy and reliability.

The training given to persons wanting to be pharmacy technicians is usually received on the job from a pharmacist or through a brief training course offered by a number of hospitals. In 1974 there were no 2-year community college training programs in Illinois, but there are a very few in other states.

PHARMACY TECHNICIAN - Further Information

Employment Prospects

In 1975 employment prospects for pharmacy technicians who have received thorough training were generally good, and were expected to remain good. Those with only limited training, and who therefore would be of less help to the pharmacist, found it less easy to find employment.

Salary

No reliable salary information was obtained. Inexperienced graduates of a 2-year community college pharmacy technician program outside of Illinois received about $450 per month.

Career Mobility

Capable, experienced pharmacy technicians working in large pharmacies may advance to assuming supervisory duties. Other than that, there is no mobility. Pharmacy technician training is not a stepping stone to becoming a pharmacist. (See page 12-A-4 for the education required in order to become a pharmacist.)

Further Reading

None

Professional Organizations Where More Information May Be Obtained

American Pharmaceutical Association
2215 Constitution Avenue, N.W.
Washington, D.C. 20037

Illinois Pharmaceutical Association
222 West Adams Street
Chicago, Illinois 60606

To Broaden Your Understanding

-obtain work experience in a pharmacy

-talk to a pharmacist and a pharmacy technician about their work

-write to the professional organizations

EMERGENCY MEDICAL TECHNICIAN (Ambulance Attendant)

Emergency medical technicians (EMT's), or ambulance attendants as they have been called in the past, play an important role in the health care system. But their past work has not been as influential as their future potential should prove. Attempts are now being made to up-grade emergency medical care and in Illinois a "trauma-care system" has been instituted in an effort to combat the rising number of deaths due to accidents and/or sudden illness.

Accidents are the fourth leading cause of death for persons of all ages in this country. Trauma, often the result of an accident or sudden illness, is the leading cause of death for persons between the ages of one and thirty-seven. Efficient emergency medical care administered by well-trained and well-equipped emergency medical technicians can do much to avert needless death and suffering. As an administrator of emergency first aid, the emergency medical technician can apply immediate care to the victim in place of the doctor. Such efforts may make the difference between life and death for a seriously ill or injured person. Sometimes for them the drive to the hospital and the wait to see a doctor is just too long.

When the EMT arrives at the scene of the accident/illness, he often must enlist the help of bystanders in order to create a safe environment in which to proceed. This is particularly important in the case of an automobile accident. He then must determine the nature and extent of the injury/illness and decide which types of emergency care should be administered and in what order. His decisions might involve opening and maintaining an air passage, resuscitating a heart attack victim, controlling bleeding, treating for shock, assisting in childbirth, or simply removing the victim as quickly and safely as possible from the scene and treating him enroute. On the way to the trauma center, the EMT may confer with the hospital doctor and emergency room staff over two-way radio.

Once the patient has reached the emergency room, the EMT may continue to aid personnel there until a physician can be obtained. Even after the patient is no longer under the EMT's care, the technician has additional duties. He is responsible for reporting to the attending physician and staff his own observations on what has occurred as well as filling out particular forms for diagnostic and record purposes. If the victim has died, the EMT must comply with particular regulations in regard to the deceased and he must notify the coronor. And after each trip he must replace linen, have equipment sterilized and/or replaced, have the inside decontaminated, and check to be sure the ambulance itself is clean and in good working order.

Emergency medical technicians are employed in hospitals, clinics, private ambulance services, police and/or fire departments, and funeral homes.

Qualifications and Education

An emergency medical technician should be physically fit, be able to lift and carry up to 100 lbs., possess manual dexterity and general physical coordination since much of his work is physical in nature. Likewise he should be sound in mind: the traumatic situations he is called upon to deal with demand a person of emotional stability, psychological adaptability, and sound judgment under stress. He should also have a pleasant personality and be able to work smoothly with other people, giving and receiving instructions.

To qualify for training as an EMT, one must possess a high school diploma or its equivalent, and be at least 18 years of age.

Training programs are conducted in hospitals, often in affiliation with community colleges. A minimum of 86 hours of special training is required; some programs offer an additional 116 hours or more advanced training. Essential instruction acquaints the prospective EMT with the care and use of typical emergency equipment -- fracture kits, intravenous kits, rescue tools, stretchers, oxygen delivery systems, etc. -- as well as typical emergency medical procedures.

EDUCATIONAL PROGRAMS FOR THE EMERGENCY MEDICAL TECHNICIAN - ILLINOIS

(Prerequisite: Must be at least 18 years of age and be physically fit)

Required Special Training: A minimum of 81 hours of special training, conducted in hospitals, often in affiliation with community colleges. (An advanced 12-hour course in emergency medical technique is available at some of the institutions listed below.)

Emergency Medical Technician - (There are also emergency medical technician training programs not listed below given at many other hospitals in Illinois which have been designated as trauma centers.)

Carl Sandburg College
Galesburg 61401

College of DuPage
Glen Ellyn 60137

Danville Junior College
Danville 61832

Illinois Central College
East Peoria 61611

Kennedy-King College
Chicago 60621

Lake Land College
Mattoon 61938

Mayfair College
Chicago 60630

Moraine Valley Community College
Palos Hills 60465

Parkland College
Champaign 61820

St. James Hospital
Pontiac 61764

St. Joseph Hospital
Bloomington 61701

Western Illinois University
Macomb 61455

EMERGENCY MEDICAL TECHNICIAN - Further Information

Employment Prospects

In Illinois in 1975, emergency medical technician employment prospects for police and fire personnel were good. Employment prospects for emergency medical technicians working for private ambulance companies were poor, due to the decreasing number of these companies. These conditions were expected to continue throughout the next decade.

Salary

Starting salaries for inexperienced emergency medical technicians averaged $7,000 per year in 1975. Emergency medical technicians with five years of work experience could expect salaries of up to $9,000.

Career Mobility

Emergency medical technicians wishing for both greater responsibility and income may take an advanced EMT II (Paramedic) course. Completion of this course prepares the emergency medical technician to administer intravenous fluids, give tracheal intubations, and provide limited coronary care.

Further Reading

Emergency journal

Emergency Medical Services journal

Professional Organizations Where More Information May Be Obtained

National Registry of Emergency Medical Technicians
1395 E. Dublin-Granville Road
P.O. Box 29233
Columbus, Ohio 43229

To Broaden Your Understanding

- talk with an emergency medical technician about his/her work
- obtain employment assisting in emergency care with a hospital or private ambulance agency
- write to schools and the professional organization

MEDICAL PHYSICIST

The medical (or hospital health) physicist is a fairly new arrival to the health field. His rise to prominence corresponds directly with the advent of the atomic age and the application of the atom to peaceful uses. Medical physcists are most often associated with radiation therapy because they have played such a large part in the development of this treatment method. Today, though, they are generally found working with all aspects of diagnosis and treatment involving physics. These areas include X-ray, nuclear medicine, radiation therapy, ultrasonics, lasers, and thermography. In addition, medical physicists are also concerned with patient monitoring, medical instrumentation, and medical computations.

Research, consulting, and education are the three areas of activity in which the medical physicist works today. Some specialize in just one area but most are involved in all three areas during the course of their careers. Research is currently being conducted in such important areas as cancer detection and treatment. In consultation they combine their efforts with physicians to determine the best treatment for a particular patient. They work to maintain and improve standards for control of radiation hazards in hospitals. Those medical physicists who are educators help to train future doctors, technicians, and medical physicists.

Most medical physicists are employed by universities and hospitals. Often they work in a hospital and are also faculty members at an affiliated university.

Qualifications and Education

Due to the complexity of this field, the qualities of intellectual curiosity, scientific aptitude, and patience are indispensable. Those interested in medical physics ought to have excellent ability in mathematics and the sciences. A master's degree or doctorate is essential. College course work related to this field would include physics, biophysics, medical physics, chemistry, mathematics, and radiation biology.

EDUCATIONAL PROGRAMS IN MEDICAL PHYSICS - ILLINOIS

For Preparation as a Medical Physicist or Health Physicist

(Prerequisite: 4-year university program in the physical sciences)

Required Special Training: master's or doctoral degree in medical physics

Medical Physicist

Health Physicist

University of Chicago
Chicago 60637

(offers a 2-year master's degree in medical physics and a 4-year doctoral degree in medical physics)

MEDICAL PHYSICIST - Further Information

Employment Prospects

In 1975 employment prospects for medical physicists were good. They were better than ever before, and were expected to continue to improve in the coming years with the increasing realization by many hospitals of the important contribution of medical physics to health care.

Salary

In Illinois beginning salaries for inexperienced medical physicists with a master's degree were $10,000 to $12,000 per year in 1975. Beginning salaries for those with doctorates were $15,000 to $16,000. Salaries for persons with doctorates and with five years of work experience averaged $25,000-$30,000. Generally, the incomes of medical physicists employed by hospitals and in industry were roughly similar.

Career Mobility

A master's degree in medical physics is necessary to enter this field. Capable experienced persons have good chances of gaining increasing responsibility in this small but rapidly expanding field. Administration and the instruction of physicians are typical of the more advanced kinds of work done by medical physicists.

Further Reading

Medical Physics, a journal published by the American Association of Physicists in Medicine

Professional Organization Where More Information May Be Obtained

Administrative Secretary
American Association of Physicists in Medicine
335 East 45th Street
New York, New York 10017

To Broaden Your Understanding

- talk to a medical physicist at a larger hospital about his/her work (there are no medical physicists at many smaller hospitals)
- obtain paid or volunteer work in a health care facility
- write to the school and the professional organization

HEALTH PHYSICIST

The health physicist is often confused with the medical physicist; in general, the difference between the two amounts to the degree of specialization. Whereas medical physicists are found most often in the hospital-university-clinical setting, health physicists are more often involved outside of the hospital, in government and industry, in public and environmental health. Many health physicists are employed by the U.S. Atomic Energy Commission, the U.S. Department of Public Health, in large scientific laboratories such as Argonne National Labs near Chicago, and in private industry such as Commonwealth Edison. Their role is to protect man and his environment from the hazards of ionizing radiation. Their work involves research, consulting, and education as well as enforcement and development of state and federal regulations pertaining to radiation safety.

Qualifications and Education

Health physicists begin their career with a strong curricula in the physical sciences on the college level. Due to the complexity of this field, the qualities of intellectual curiosity, scientific aptitude, and patience are indispensable. Those interested in health physics ought to have excellent ability in mathematics and the sciences. A master's degree or doctorate is essential. College course work related to this field would include physics, biophysics, medical physics, chemistry, mathematics, and radiation biology.

HEALTH PHYSICIST - Further Information

Employment Prospects

In 1975 employment prospects for health physicists were good, nationally. Due to the increased use of radioactive substances in industry and in health care, and the need to protect the environment from radiation hazards, employment prospects in the next decade should continue to improve.

Salary

In 1975 inexperienced health physicists with master's degrees earned an average of $12,000 per year. Those with five years of experience received in the neighborhood of $17,000.

Career Mobility

No information was obtained regarding career mobility.

Further Reading

Health Physics Society, A New Profession in the Nuclear Age, no date (a booklet available free from the Health Physics Society)

Professional Organization Where More Information May Be Obtained

Health Physics Society
4211 39th Street, N.W.
Washington, D.C. 20016

To Broaden Your Understanding

- visit a university, hospital, laboratory, or other facility employing health physicists and discuss their work
- write to the school and the professional organization

FUNERAL DIRECTOR AND EMBALMER

The funeral director helps families and friends of deceased persons, many of whom are under considerable emotional stress and bewildered by the many details of the occasion, to make the personal and business arrangements necessary for the funeral service and burial.

The embalmer prepares the body for viewing and for burial. In many instances the funeral director and the embalmer are the same person.

The director's job begins when a call is received from a family requesting services. After arranging for the body to be removed to the funeral home, the director obtains the information needed for the death certificate, such as date and place of birth and cause of death. The director makes an appointment with the family to discuss the details of the funeral. These include: time and place of services; clergyman and organist; selection of casket and clothing; and provisions for burial or cremation. Directors also make arrangements with the cemetery, place obituary notices in the newspapers, and take care of many other details. Directors must be familiar with the funeral and burial customs of various religious faiths and fraternal organizations.

Embalming is a sanitary and preservative measure, and under certain circumstances, such as delayed burials, is required by law. Embalmers, perhaps with the help of apprentices, first wash the body with germicidal soap and shave it if necessary. The embalming process itself replaces the blood with a preservative fluid. Embalmers apply cosmetics to give the body a natural appearance and, if necessary, restore disfigured features. Finally, they dress the body and place in the casket selected by the family.

On the day of the funeral, directors attend to floral displays, provide cars for the family and pallbearers, receive and usher guests to their seats and organize the funeral procession After the service they may help the family file claims for social security, veteran's and union benefits, and insurance. Directors may serve a family several months following the funeral until all these matters are satisfactorily completed.

Funeral homes, which numbered 23,000 in 1972, employed nearly all of the directors and embalmers. Most funeral homes had 1 to 3 of these workers, including the owner. Many large homes, however, had 20 or more. Several hundred embalmers worked for morgues and hospitals.

Qualifications and Education

Important personal qualities for funeral directors are courtesy, tact, and the ability to communicate effectively with the public. They should have the desire and ability to comfort grieving people. Embalmers should have the manual dexterity and sense of good taste necessary for performing the varied aspects of the embalming process.

High school students can start preparing for a career in this field by taking courses in biology, chemistry, speech, and psychology. Students may find part-time or summer jobs in a funeral home. Although these jobs consist mostly of maintenance and clean-up tasks, such as washing and polishing hearses, they can be helpful in gaining familiarity with the operation of funeral homes.

In order to become a funeral director or embalmer in Illinois, a high school diploma or its equivalent is required, followed by at least one year of college, one year in a school of mortuary science, and a one-year apprenticeship. Following completion of these requirements there is a state licensing examination to be passed in order to be an embalmer, and a second examination necessary to become a funeral director.

EDUCATIONAL PROGRAMS IN MORTUARY SCIENCE - ILLINOIS

(Prerequisite: high school diploma or equivalent)

Required Special Training: One year of college, one year of mortuary science education, and one year of apprenticeship.

Southern Illinois University Carbondale 62901	(2-year associate degree program)
Worsham College of Mortuary Science, Inc. Chicago 60610	(In order to be admitted to this one-year mortuary science program, one year of college work must have been completed elsewhere)

FUNERAL DIRECTOR AND EMBALMER - Further Information

Employment Prospects

In 1975 employment prospects for funeral directors and embalmers were very good and were expected to remain so in the coming years.

Salary

In 1975 Illinois salaries for new graduates of mortuary science programs who were serving their one-year apprenticeships averaged $125 - $145 per week. Fully licensed embalmers and funeral directors who did not own their own funeral homes earned between $175 and $250 weekly. Those who owned their own funeral homes, and did a large volume of business, earned considerably more.

Career Mobility

Most inexperienced embalmers and funeral directors begin their working life in the employment of a funeral home. The ambition of most of them is to purchase and operate their own funeral home.

Further Reading

Grollmann, Earl, Concerning Death, A Practical Guide for the Living, Beacon Press, Boston, 1974

Jackson, Edgar N., For the Living, Channel Press, Des Moines, Iowa, 1963

National Funeral Directors Association, Funeral Service: Meeting Needs, Serving People, Milwaukee, Wisconsin, 1974

Professional Organization Where More Information May Be Obtained

National Funeral Directors Association
135 West Wells Street
Milwaukee, Wisconsin 53203

To Broaden Your Understanding

- obtain volunteer or paid work experience with an embalmer or funeral director

- talk with an embalmer and a funeral director about their work

- write to schools and the professional organizations

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